

FT5733/5433

(contains FT4727/4427 Information)

FIELD SERVICE

MANUAL

SECTION 1

SPECIFICATIONS

1. SPECIFICATIONS

Configuration: Desktop

Copy Process: Dry electrostatic transfer system

Originals: Sheet/Book

Original Size: Maximum 11" x 17"

Copy Paper Size: Maximum 11" x 17"
Minimum 5 1/2" x 8 1/2" (lengthwise)

(Duplex Copying)

Multiple: 8 1/2" x 11" (sideways)

Single/Overlay: Maximum 11" x 17"
Minimum 8 1/2" x 11"

Copy Paper Weight:

- 250-sheet paper tray and 1000-sheet large capacity tray:
14 –34lb
- By-pass feed table:
14 –43lb
- Duplex and overlay:
17 –28lb

Reproduction Ratios: 4 Enlargement and 6 Reduction

	FT5733/5433
Enlargement	200% 155% 129% 121%
Full Size	100%
Reduction	93% 85% 77% 74% 65% 50%

Receiving Tray Capacity: 250 sheets (8 1/2" x 14" and smaller)
100 sheets (11" x 17")

Power Source: 115V, 60HZ, more than 12A

Power Consumption: Maximum: 1.5 KW
 Warm-up: 0.77 KW
 Stand-by: 0.14 KW
 Copy Cycle (average): 1.2 KW

Noise Emission: Stand-by: less than 40 dB
 Copy Cycle (average):
 less than 57 dB (copier only)
 less than 59 dB (full system)
 Maximum:
 less than 62 dB (copier only)
 less than 63 dB (full system)

Dimensions:

	Width	Depth	Height
FT5733	34.3" (42.2")	23.6"	21.3" (22.6")
FT5433	34.3" (42.2")	23.6"	21.3" (22.6")

(): When the by-pass feed table is opened, the copy tray is extended, and the platen cover is installed.

Weight: Copier only (Without the optional platen cover=Approximately 2 kg)

FT5733: approximately 194.0 lb
FT5433: approximately 185.2 lb

Zoom: From 50% to 200% in 1% steps

Copying Speed: 33 copies/minute (8 1/2" x 11" sideways)
 18 copies/minute (11" x 17")

Warm-up Time: Less than 2 minutes (20°C, 68°F)

First Copy Time:	Black copy: 4.9 seconds (8 1/2" x 11" sideways) FT5733/5433: (Large capacity tray feed) Color copy: 7.0 seconds FT5733/5433: (Large capacity tray feed)
Copy Number Input:	Ten keys, 1 to 999 (count up or count down)
Manual Image Density:	7 steps
Automatic Reset:	1 minute standard setting; can also be set to 3 minutes or no auto reset.
Copy Paper Capacity:	<ul style="list-style-type: none">• By-pass feed table; approx. 20 sheets• Paper tray: approx. 250 sheets• Large capacity tray; approx. 1000 sheets
Toner Replenishment:	Black: cartridge exchange (320 g/cartridge) yield 10,500 copies Color: cartridge exchange (60 g/cartridge) yield 1300 copies Black: (1000 g/bag) yield 80,000 copies
Developer Replenishment:	Color: (400 g/bag) yield 15,000 copies
Optional Equipment:	<ul style="list-style-type: none">• Platen cover• DF56, Document feeder• PS250, Paper tray unit with three paper tray• CS2090, 20 bin mini sorter• ST22, 20 bin sorter stapler• TYPE G Sorter adapter (needed when installing the mini, or the sorter stapler)• TYPE G Interface PCB (needed when installing the sorter stapler or the menu reader)• MR20, Menu reader• RE12, Editor (only for FT5733)• TYPE B, Editing interface adapter (needed when installing the editor)• CU150, Color development unit• Key counter• DLT counter (service part)

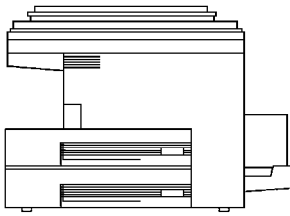

SECTION 2

COMPONENT LAYOUT

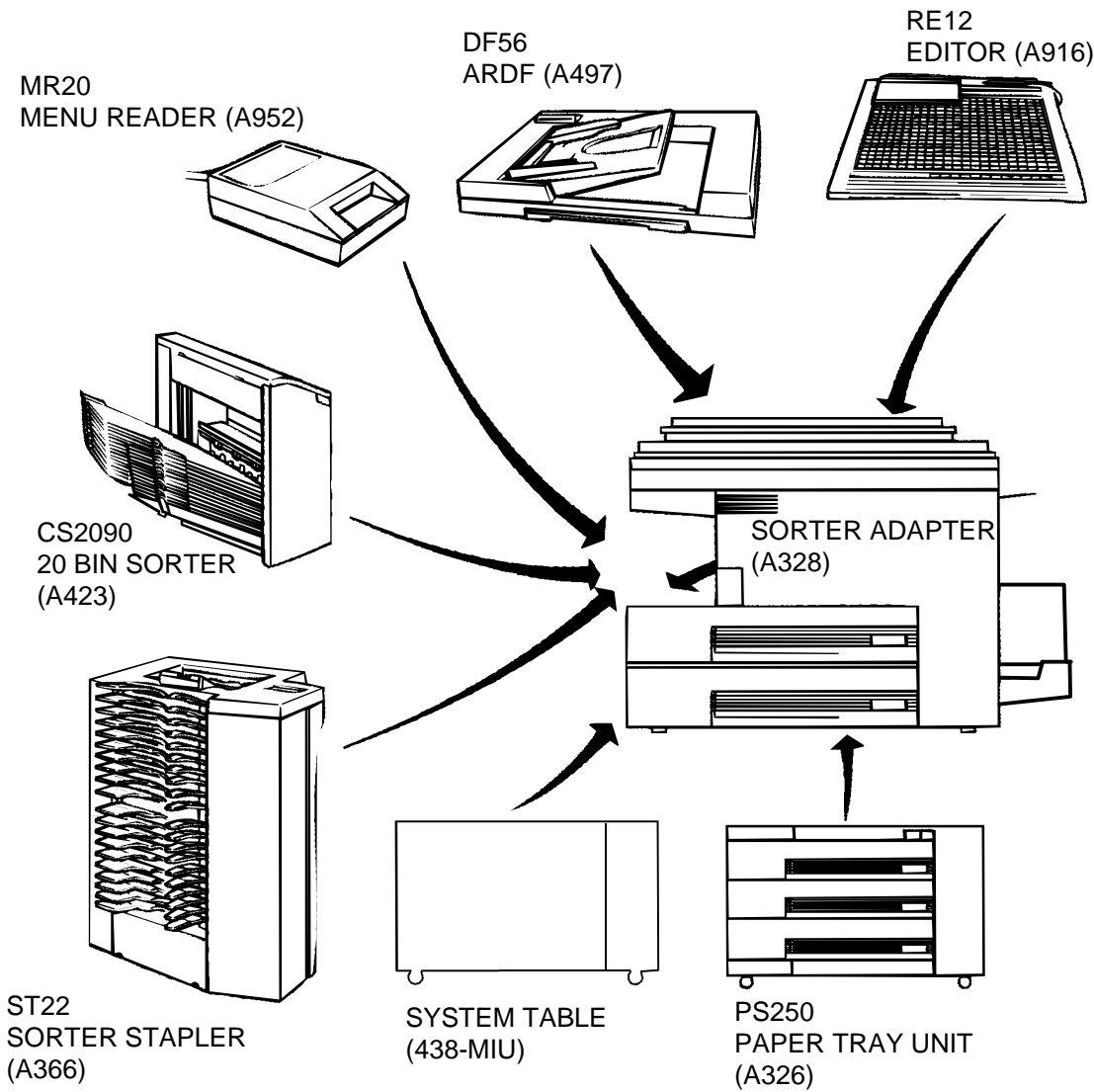
AND DESCRIPTIONS

1. MACHINE CONFIGURATION

1.1 COPIER

		
	FT5733(A074)	FT5433(A073)
UPPER TRAY	DUPLEX	250
LOWER TRAY	250	250
LCT	1,000	1,000

1.2 OPTIONAL EQUIPMENT

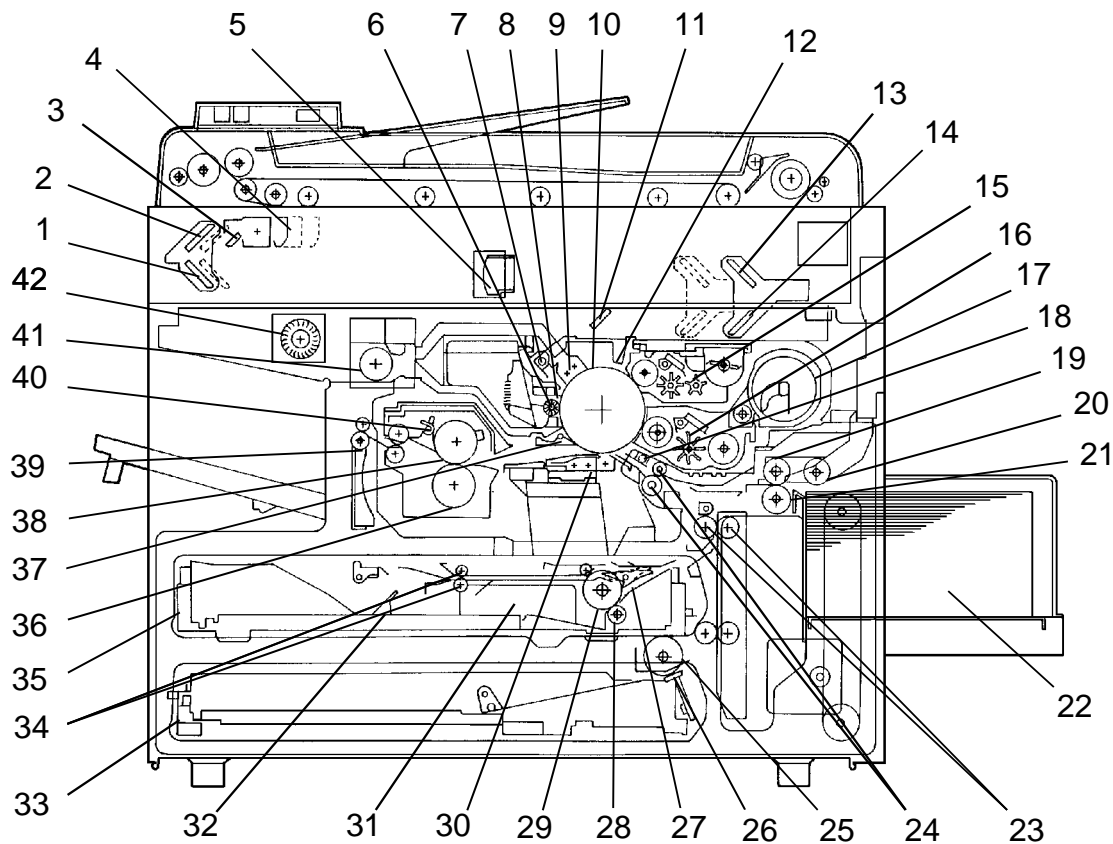


		COPIER			REQUIRED OPTIONAL EQUIPMENT		
PAPER TRAY UNIT	1 TRAY (A325)	TYPE 1 (A069)	TYPE 2 (A074)	TYPE3 (A073)	SORTER ADAPTER (A328)	INTERFACE PCB (A344)	EDITING INTERFACE ADAPTER (A345)
	3 TRAY (A326)	o	o	o			
SORTER	10 BIN (A327)	o	o	o			
	20 BIN MINI (A423)	o	o	o	*		
	20 BIN MIDI (A411)	o	o	o	*		
	20 BIN STAPLER (A366)	o	o	o	*	**	
DOCUMENT FEEDER	ARDF (A497)	o	o	o			
EDITOR (A916)		x	o	x			* **
MENU READER (A952)		o	o	o		**	
COLOR DEVELOPMENT UNIT (A337)		o	o	o			

- NOTE1:**
- * The sorter adapter is required to install the 20 bin mini sorter, 20 bin midi sorter or sorter stapler.
 - * * The I/F board is required to install the sorter stapler or Menu Reader.
 - ** *(1) The editing interface adapter is required to install the editor.
 - (2) The editing interface adapter can be installed independently when more precise erasing is desired.

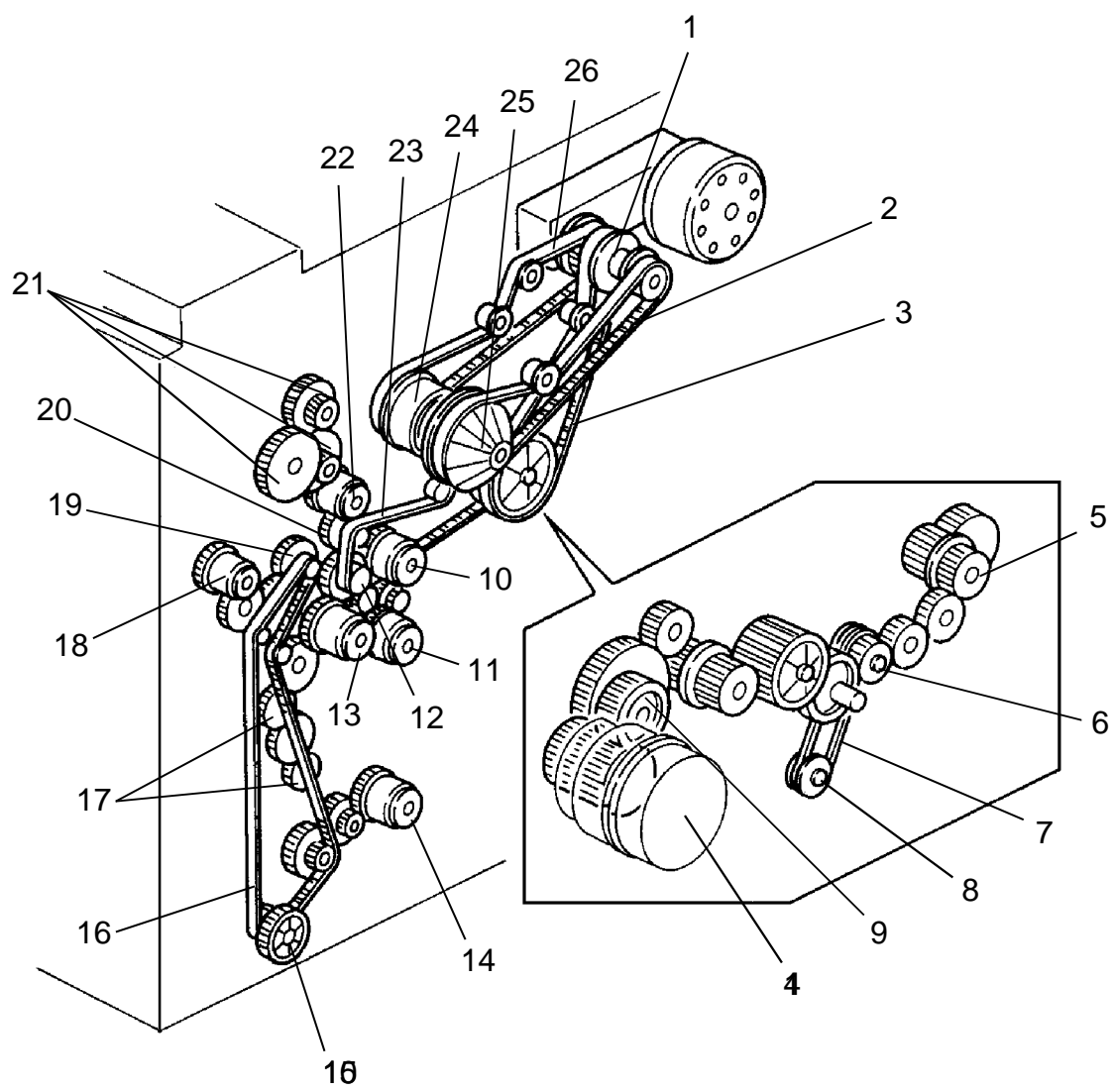
NOTE 2: When installing the sorter stapler, the copier must be placed on the paper tray unit or a table of exactly the same height.

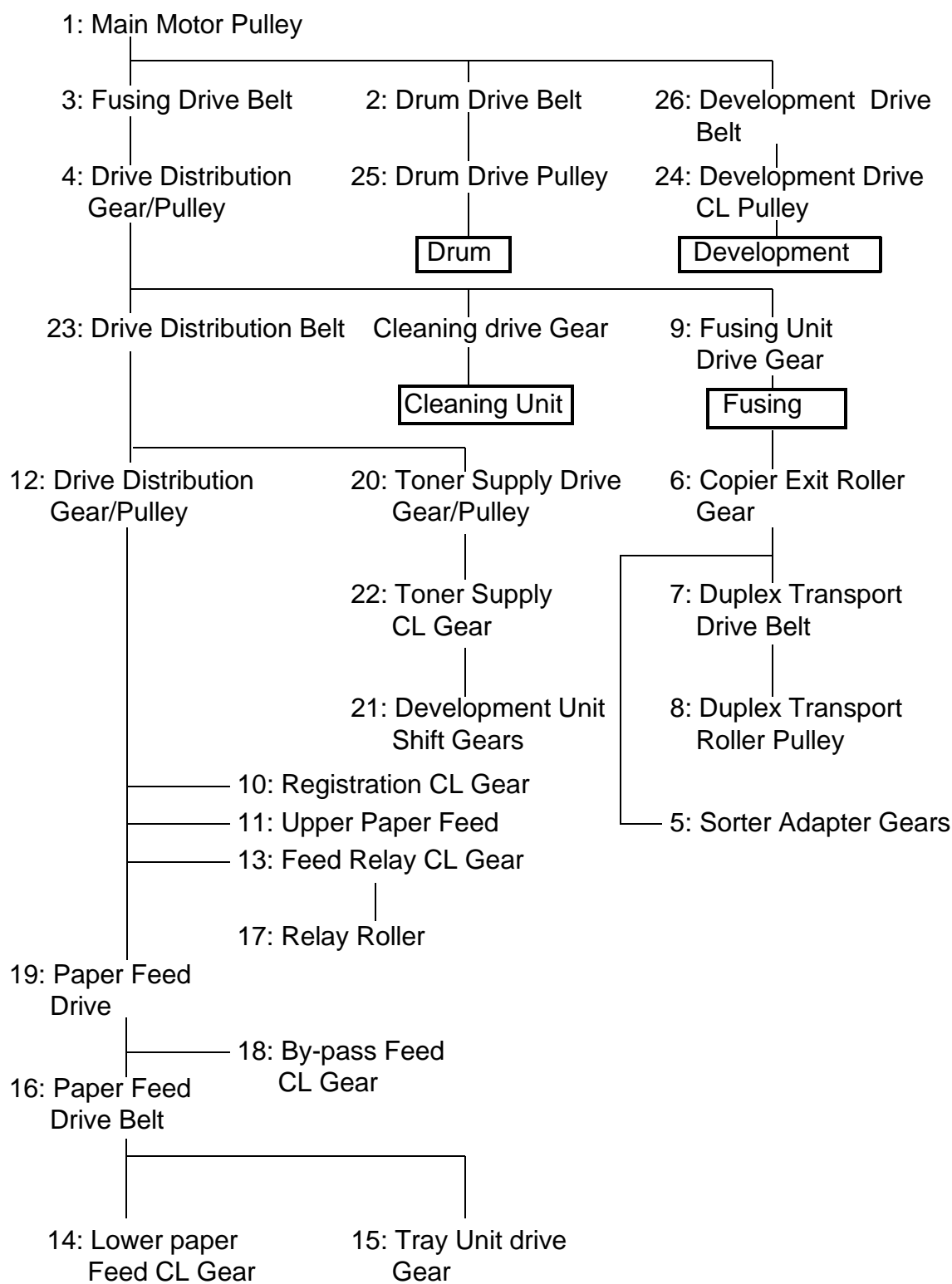
2. MECHANICAL COMPONENT LAYOUT



- | | |
|-----------------------------|---------------------------------------|
| 1. 3rd Mirror | 22. Large Capacity Tray |
| 2. 2nd Mirror | 23. Relay Rollers |
| 3. 1st Mirror | 24. Registration Rollers |
| 4. Exposure Lamp | 25. Paper Tray Feed Roller |
| 5. Lens | 26. Friction Pad |
| 6. Cleaning Brush | 27. Turn Gate |
| 7. Quenching Lamp | 28. Duplex Friction Roller |
| 8. Cleaning Blade | 29. Duplex Feed Roller |
| 9. Change Corona Unit | 30. Transfer & Separation Corona Unit |
| 10. OPC Drum | 31. Jogger Fences |
| 11. 6th Mirror | 32. End Fence |
| 12. Erase Unit | 33. Lower Paper Tray |
| 13. 4th Mirror | 34. Entrance Rollers |
| 14. 5th Mirror | 35. Duplex Tray |
| 15. Color Development Unit | 36. Pressure Roller |
| 16. Black Development Unit | 37. Pick-off Pawls |
| 17. Black Toner Supply Unit | 38. Hot Roller |
| 18. Pre-Transfer Lamp | 39. Junction Gate |
| 19. Feed Roller | 40. Hot Roller Strippers |
| 20. Pick-up Roller | 41. Transport Fan |
| 21. Separation Roller | 42. Fusing Exhaust Fan |

3. DRIVE LAYOUT





4. ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the Point to Point (Water proof paper) for symbols and index numbers.

Symbol	Name	Function	Index No.
Motors			
M1	Main	Drives the main unit components.	1
M2	Exhaust blower	Blows the ozone built up around the charge section through the ozone filter.	6
M3	Upper tray lift (non-duplex machine only)	Raises the bottom plate in the upper paper tray.	31
M4	Lower tray lift	Raises the bottom plate in the lower paper tray.	28
M5	Transport fan	Provides air flow to the transport section so that paper is held on the transport guide. Also the air flow isolates the toner collection tank from fusing heat. Provides air flow to the charge corona section as well.	65
M6	Fusing exhaust fan	Removes the heat from around the fusing unit.	66
M7	Scanner drive	Drives the 1st and 2nd scanners (dc stepper).	67
M8	3rd scanner drive	Drives the 3rd scanner (dc stepper).	75
M9	Optics cooling fan	Removes heat from the optics unit.	77
M10	Lens drive	Positions the lens.	100
M11	Duplex feed (duplex machine only)	Drives the feed roller and moves the bottom plate up and down (24 V dc stepper).	103
M12	Jogger (duplex machine only)	Drives the jogger fences to square the paper stack in the duplex tray (dc stepper).	107

Symbol	Name	Function	Index No.
M13	LCT lift	Lifts up and lowers the LCT bottom plate.	79
Circuit Board			
PCB1	dc power supply	Drives the exposure and fusing lamps and rectifies 100 Vac or 220/230/240 Vac input and outputs dc voltages.	44
PCB2	Main control	Controls all copier functions both directly and through the other control boards.	10
PCB3	Scanner motor control	Controls the speed of the scanner drive motor.	69
PCB4	Main motor control	Controls the rotation of the main motor.	71
PCB5	Operation panel	Controls the LED matrix, and monitors the key matrix.	93
PCB6	ADS sensor	Senses the background density of the original.	90
PCB7	High voltage supply - CTBG	Supplies high voltage for the charge corona, grid bias, transfer corona, and development bias.	9
PCB8	High voltage supply - D	Supplies high voltage for the separation corona.	8
PCB9	PTL/QL stabilizer	Provides high voltage for the quenching and pre-transfer lamps.	73
PCB10	Duplex control (duplex machine only)	Controls the rotation of the duplex feed motor.	106
PCB11	LCT interface (LCT machine only)	Interfaces the LCT control signal between the main control board and the LCT.	80
PCB12	Guidance display control (duplex machine only)	Controls the guidance display board.	92
PCB13	Guidance display (duplex machine only)	Displays guidance for machine operation.	94

Symbol	Name	Function	Index No.
PCB14	Interface - type G (option for sorter stapler and menu reader)	Interfaces the sorter stapler and menu reader with the main control board.	16
Switches			
SW1	Upper paper size - 1 (non-duplex machine only)	Determines what size paper is in the upper paper tray.	2
SW2	Upper paper size - 2 (non-duplex machine only)	Determines what size paper is in the upper paper tray.	3
SW3	Upper paper size - 3 (non-duplex machine only)	Determines what size paper is in the upper paper tray.	4
SW4	Upper paper size - 4 (non-duplex machine only)	Determines what size paper is in the upper paper tray.	5
SW5	Lower paper size - 1	Determines what size paper is in the lower paper tray.	36
SW6	Lower paper size - 2	Determines what size paper is in the lower paper tray.	34
SW7	Lower paper size - 3	Determines what size paper is in the lower paper tray.	33
SW8	Lower paper size - 4	Determines what size paper is in the lower paper tray.	32
SW9	Color detection	Detects if color development unit is set or not and which color toner development unit is installed.	13
SW10	Exit cover (Duplex machine only)	Cuts the ac power line.	64
SW11	Platen cover	Informs the CPU when the platen cover is closed.	88

Symbol	Name	Function	Index No.
SW12	Front door safety	Cuts the ac power line through RA1 and detects if the front door is open or not.	91
SW13	Main	Supplies power to the copier.	95
SW14	LCT cover - 1	Detects if the LCT cover is open or not.	83
SW15	LCT cover - 2	Cuts the dc power line of the LCT lift motor.	84
SW16	LCT down	Sends a signal to the CPU to lower the LCT bottom plate.	85
Lamps			
L1	Quenching	Neutralizes any charge remaining on the drum surface after cleaning.	47
L2	Pre-transfer	Reduces the charge on the drum surface before transfer.	49
L3	Fusing	Provides heat to the hot roller.	60
L4	Exposure	Applies high intensity light to the original exposure.	99
L5	Erase	Eliminates the charge for unnecessary areas of the image on the drum surface before exposure.	48
Magnetic Clutches			
MC1	Development drive	Drives the development roller.	11
MC2	Toner supply	Drives the toner supply roller.	14
MC3	By-pass feed	Starts paper feed from the by-pass feed table or LCT.	17
MC4	Feed relay	Drives the relay rollers.	19
MC5	Registration	Drives the registration rollers.	20.
MC6	Upper paper feed (non-duplex machine only)	Starts paper feed from the upper paper tray.	22

Symbol	Name	Function	Index No.
MC7	Lower paper feed	Starts paper feed from the lower paper tray.	24
Solenoids			
SOL1	Development unit change	Changes the position of the black development unit and color development unit.	12
SOL2	Pick-up roller	Picks paper up from the by-pass feed table or LCT.	18
SOL3	Duplex tray lock (duplex machine only)	Locks the duplex tray in the main copier.	29
SOL4	Upper tray lock (non-duplex machine only)	Locks the upper paper tray in the main copier.	39
SOL5	Lower tray lock	Locks the lower paper tray in the main copier.	37
SOL6	Junction gate (duplex machine only)	Moves the junction gate to direct copies to the duplex tray or to the paper exit.	43
SOL7	Duplex turn gate (duplex machine only)	Moves the duplex turn gate to direct copies to the duplex tray or to the relay rollers.	105
Sensors			
S1	By-pass feed table	Detects if the by-pass feed table is open or closed.	15
S2	Upper tray set (non-duplex machine only)	Detects if the upper paper tray is set or not.	21
S3	Lower tray set	Detects if the lower paper tray is set or not.	26
S4	By-pass feed paper end	Informs the CPU that there is no paper in the by-pass feed table.	53
S5	Upper tray paper end (non-duplex machine only)	Informs the CPU when the upper paper tray runs out of paper.	23

Symbol	Name	Function	Index No.
S6	Lower tray paper end	Informs the CPU when the lower paper tray runs out of paper.	25
S7	Upper tray upper limit (non-duplex machine only)	Detects the upper position of the paper stack in the upper tray to stop the upper lift motor.	30
S8	Lower tray upper limit	Detects the upper position of the paper stack in the lower tray to stop the lower lift motor.	27
S9	Lower relay	Detects the lead edge of paper from the lower paper tray to determine the stop timing of the lower paper feed clutch and detects misfeeds.	51
S10	Upper relay	Detects the lead edge of paper from the upper paper tray to determine the stop timing of the upper paper feed clutch and detects misfeeds.	50
S11	Registration	Detects the lead edge of paper to determine the stop timing of the feed relay clutch and detects misfeeds.	52
S12	Image density (ID)	Detects the density of the ID sensor pattern on the drum to control the toner density.	57
S13	V	Detects the VR and VL patterns.	58
S14	Fusing exit	Detects misfeeds.	62
S15	Junction gate (duplex machine only)	Detects misfeeds.	63
S16	Scanner H.P.	Informs the CPU when the 1st scanner is at the home position.	68
S17	Lens H.P.	Informs the CPU when the lens is at the full-size position.	72
S18	Platen position	Informs the CPU when the platen cover is positioned. When the angle between, the platen cover and the exposure glass is about 30 degrees.	74
S19	3rd scanner H.P.	Informs the CPU when the 3rd scanner is in the full size position.	76

Symbol	Name	Function	Index No.
S20	Original length	Detects the original length.	89
S21	Original width	Detects the original width.	96
S22	Duplex entrance (duplex machine only)	Detects misfeed.	109
S23	Duplex turn gate (duplex machine only)	Detects the trail edge of paper to determine the reverse timing of the duplex motor and detects misfeed.	101
S24	Duplex paper end (duplex machine only)	Detects copy in the duplex tray.	102
S25	Jogger H.P. (duplex machine only)	Detects if the jogger fences are at home position.	108
S26	LCT paper end (LCT machine only)	Informs the CPU when the LCT runs out of paper.	82
S27	LCT lower limit (LCT machine only)	Sends signal to CPU to stop lowering the LCT bottom plate.	81
S28	LCT upper limit (LCT machine only)	Sends signal to CPU to stop lifting up the LCT bottom plate.	78
Heaters			
H1	Drum	Turns on when the main switch is off to prevent moisture around the drum.	54
H2	Optics anti-condensation (option)	Turns on when the main switch is off to prevent moisture from forming on the optics.	97
H3	Upper tray (option)	Turns on when the main switch is off to keep paper dry in the upper paper tray.	55
H4	Lower tray (option)	Turns on when the main switch is off to keep paper dry in the lower paper tray.	87

Symbol	Name	Function	Index No.
Thermistor			
TH1	Drum	Monitors the temperature around the drum.	56
TH2	Fusing	Monitors the temperature of the hot roller.	59
TH3	Optics	Monitors the temperature of the optics cavity.	98
TH4	Duplex motor (duplex machine only)	Monitors the temperature of the duplex motor.	104
Thermofuse			
TF1	Fusing	Provides back-up overheat protection in the fusing unit.	61
Thermoswitch			
TS1	Optics	Provides overheat protection in the optics unit.	70
Noise filter			
NF1		Removes electrical noise.	40
Fuse			
FU1	Main (115 V machine only)	Provides back-up high current protection in the electrical components.	42
FU2	Sorter line (115 V machine only)	Provides back-up high current protection in the electrical components of the sorter.	46
FU3	DF line (115 V machine only)	Provides back-up high correct protection in the electrical components of the ARDF.	7
Circuit Breaker			
CB1	(230 V machine only)	Provides back-up high current protection in the electrical components.	41

Symbol	Name	Function	Index No.
Relay			
RA1	Main power	Controls main power.	45
Transformer			
TR1	Main	Steps down the wall voltage to 100 V ac.	38
Counter			
CO1	Total	Keeps track of the total number of copies made.	86

SECTION 3

INSTALLATION

1. INSTALLATION REQUIREMENT

1.1 ENVIRONMENT

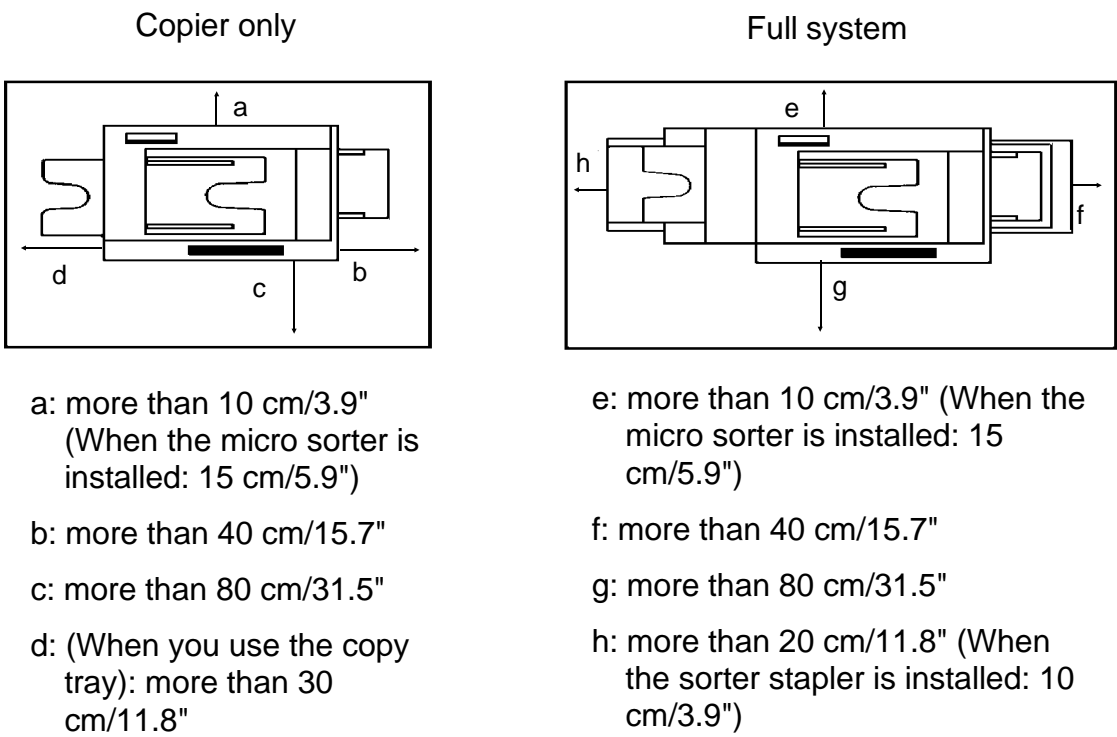
1. Temperature Range: 10°C to 30°C (50°F to 86°F)
2. Humidity Range: 15% to 90% RH
3. Ambient Illumination: Less than 1,500 lux (do not expose to direct sunlight)
4. Ventilation: Minimum space 20 m³. Room air should turn over at least 30 m³/hr/person.
5. Ambient Dust: Less than 0.15 mg/m³ (4 x 10⁻⁶ oz/yd³)
6. If the machine location is air-conditioned or heated, place the machine:
 - a) where it will not be subjected to sudden temperature changes.
 - b) where it will not be directly exposed to cool air from an air-conditioner in the summer.
 - c) where it will not be directly exposed to reflected heat from a space heater in winter.
7. Avoid placing the machine in an area filled with corrosive gas.
8. Avoid any places higher than 2,000 meters (6,500 feet) above sea level.
9. Place the machine on a strong and level base.
10. Avoid any area where the machine may be frequently subjected to strong vibration.

1.2 MACHINE LEVEL

- 1. Front to back level: within 5 mm (0.2")
- 2. Right to left level: within 5 mm (0.2")

Use a carpenter’s level to level the machine

1.3 MINIMUM SPACE REQUIREMENTS



NOTE: When the micro sorter is equipped, make sure there is at least 15 cm (6.0") clearance on the back side, in order to avoid damaging the sorter when it is opened.

1.4 POWER REQUIREMENTS

1. Input voltage level:

110V/60Hz	: More than 15A (for Taiwan)
115V/60Hz	: More than 15A (for N.A.)
220V/230V/240V/50Hz	: More than 8A (for EU.)
220V/60Hz	: More than 8A

2. Permissible voltage fluctuation: ±10%

3. Do not set anything on the power cord.

- NOTE:** a) Make sure the plug is firmly inserted in the outlet.
b) Avoid multi-wiring.

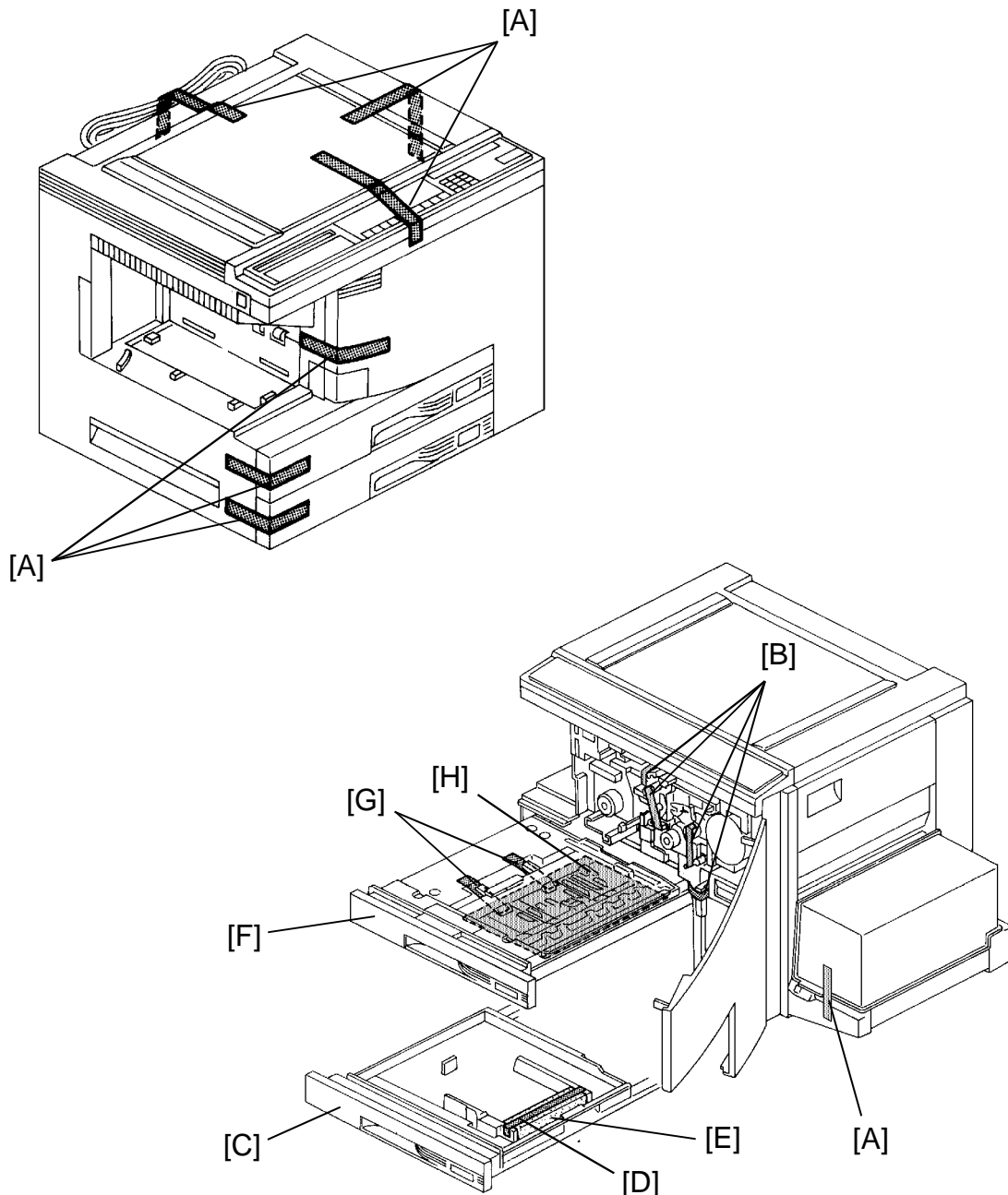
2. COPIER INSTALLATION

2.1 COPIER INSTALLATION

2.1.1 Accessory Check

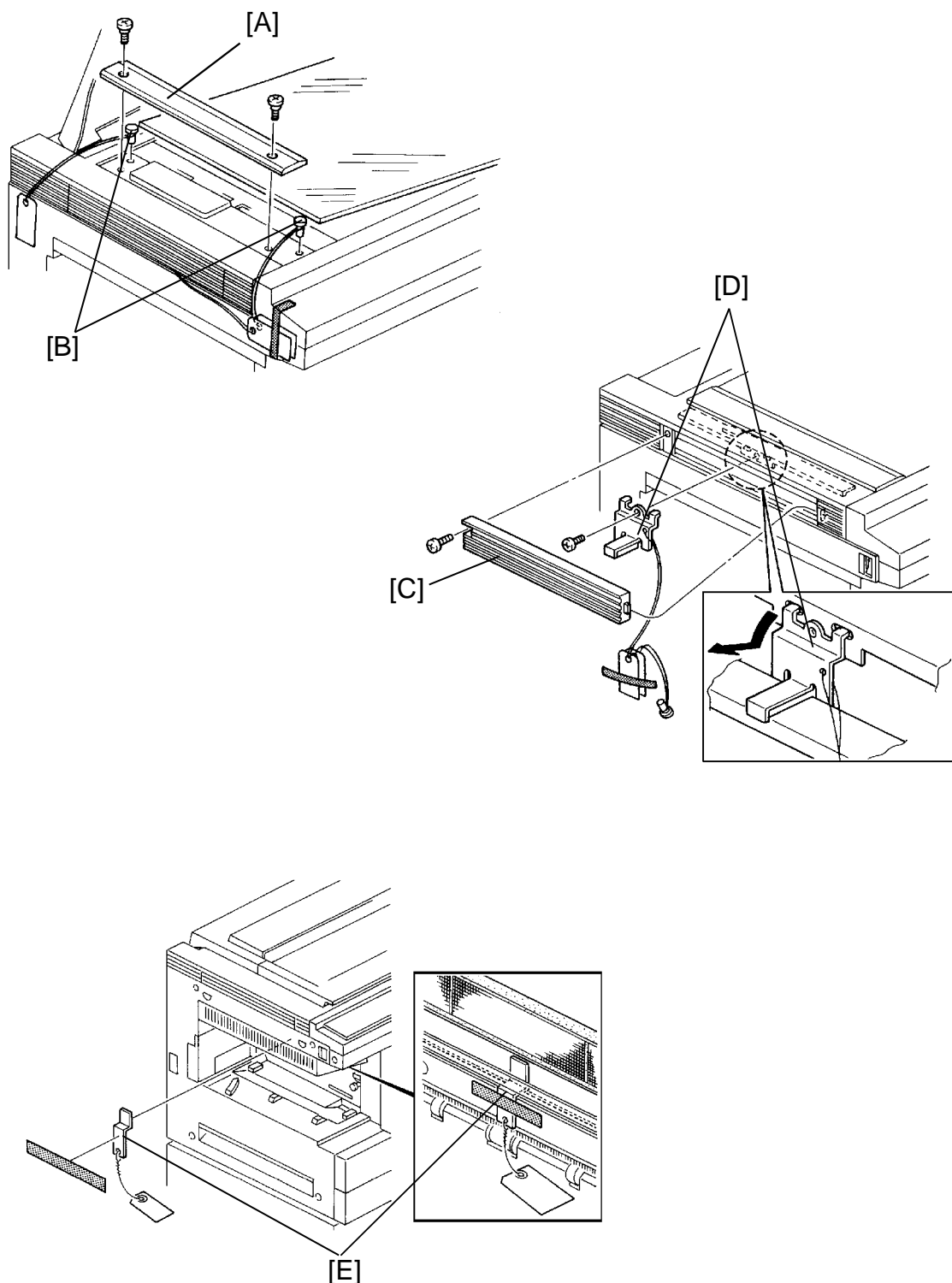
- 1. Receiving Tray..... 1
- 2. Outer Decal - Symbol Explanation 1
- 3. Sorter Key Top and Cover..... 1
- 4. Counter Set Key (--17 machine only) 1
- 5. Installation Procedure..... 1
- 6. Operating Instructions (Except --27 machine) 1
- 7. Now Equipment Condition Report
 (--17, --19, --27, --29 machine only) 1
- 8. Envelope for NECR (--17 machine only) 1
- 9. User Survey Card (--17 machine only) 1

2.1.2 Installation Procedure

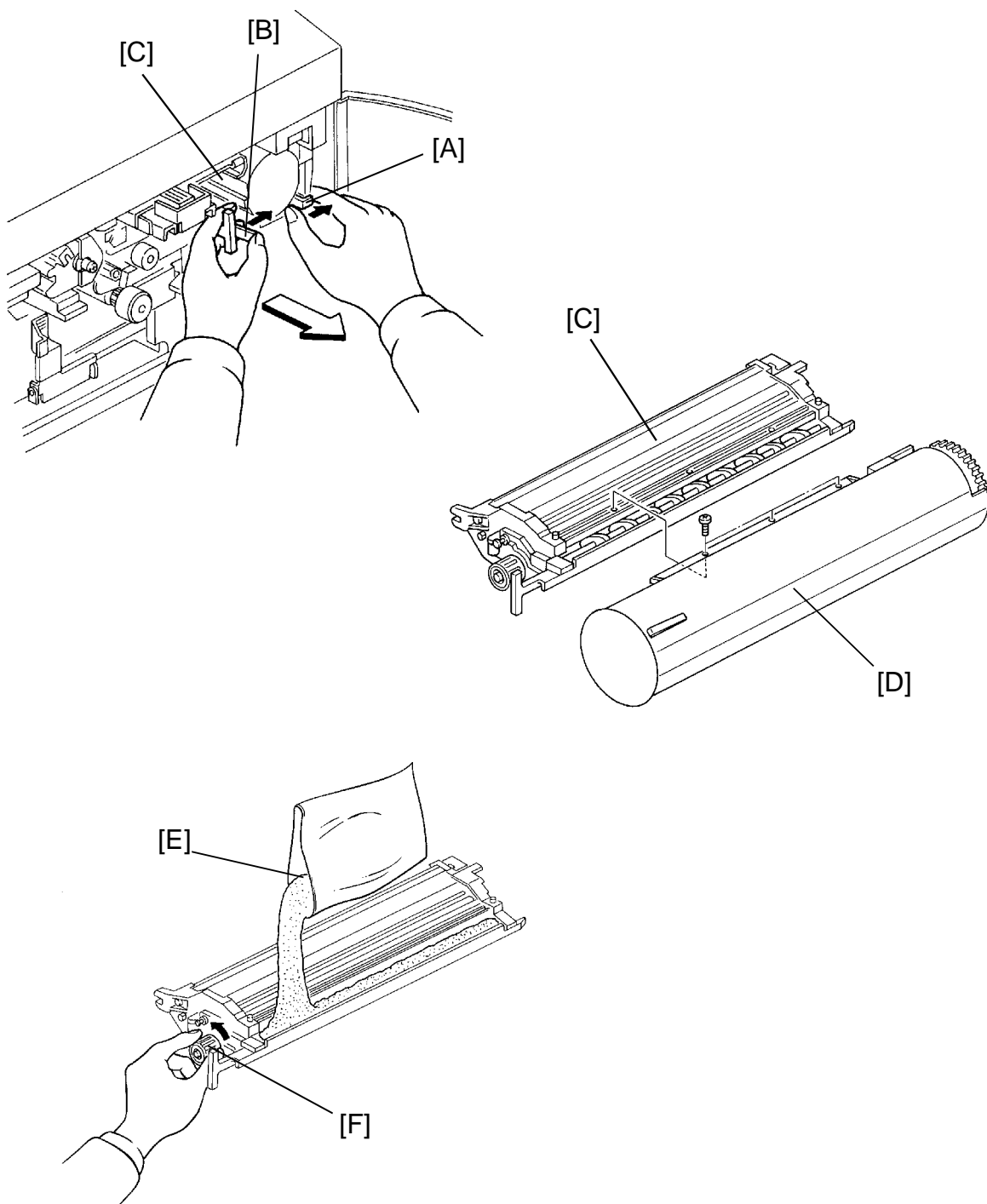


NOTE: Keep the shipping retainers after installing the machine. They will be reused if in the future the machine is transported to another location. Proper reinstallation of the shipping retainers is required in order to avoid any transport damage. It is important to replace the scanner lock pins and the scanner lock plate before transporting this copier. If it is not done, skewed image may result.

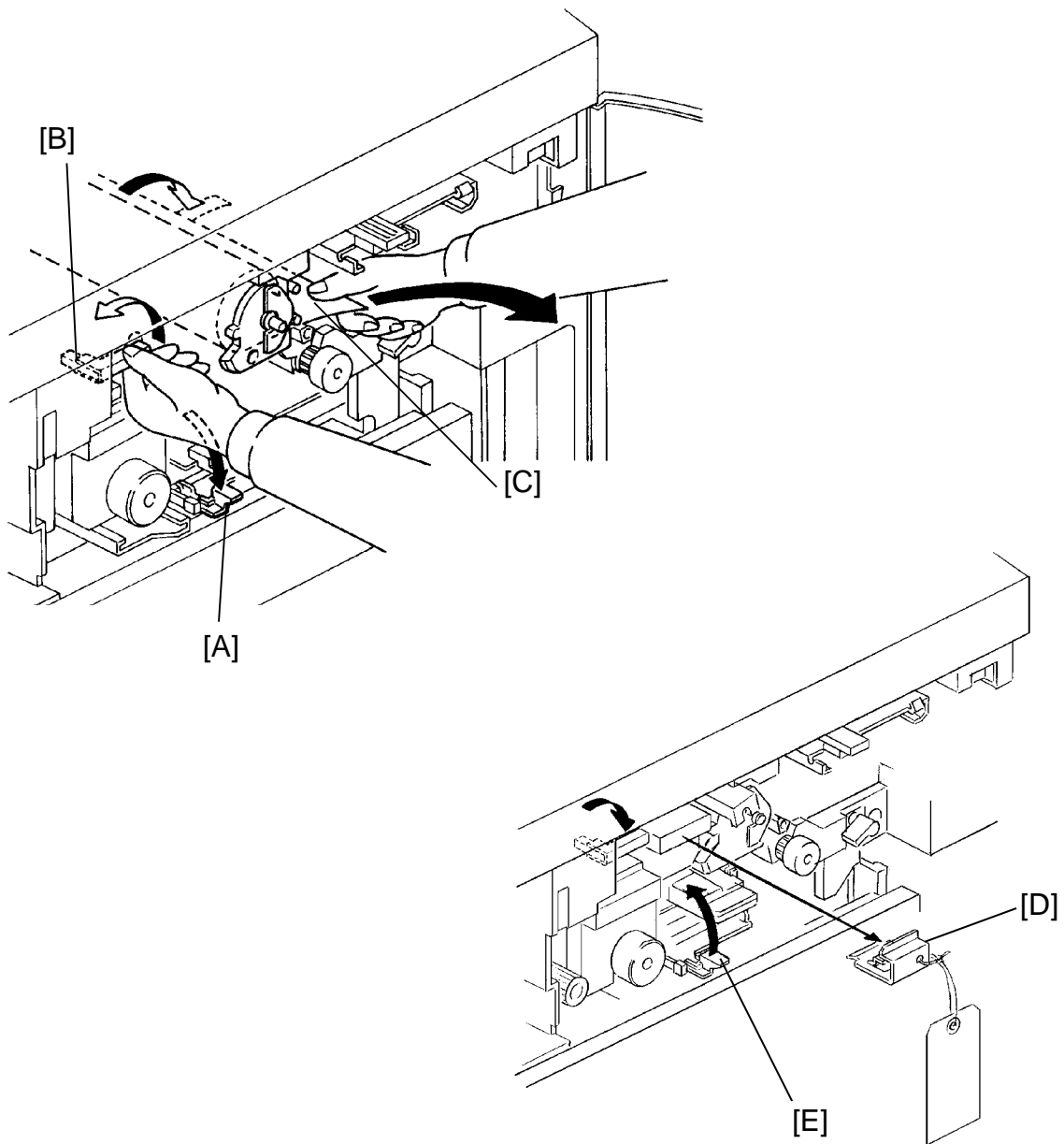
1. Remove the 7 strips of tape [A] as shown.
2. Open the front door and remove 4 strips of tape [B] as shown.
3. Pull out the paper tray [C], and remove a strip of tape [D] and the foam block [E] (1 tray for the duplex machine and 2 trays for the non-duplex machine).
4. Pull out the duplex tray [F] and remove the 2 strips of tape [G] and 3 sheets of paper [H] (duplex machine only).



5. Remove the left scale [A] (2 shoulder screws).
6. Remove the scanner lock pin [B] simply by pulling it up from the front and the rear side of the left scale bracket.
7. Reinstall the left scale.
8. Remove the left optics cover [C] (1 screw).
9. Remove the scanner lock plate [D] (1 screw) by pulling and lifting it up and reinstall the left optics cover.
10. Remove the shipping retainer [E] holding the ozone filter. The retainer is taped on the upper exit cover.



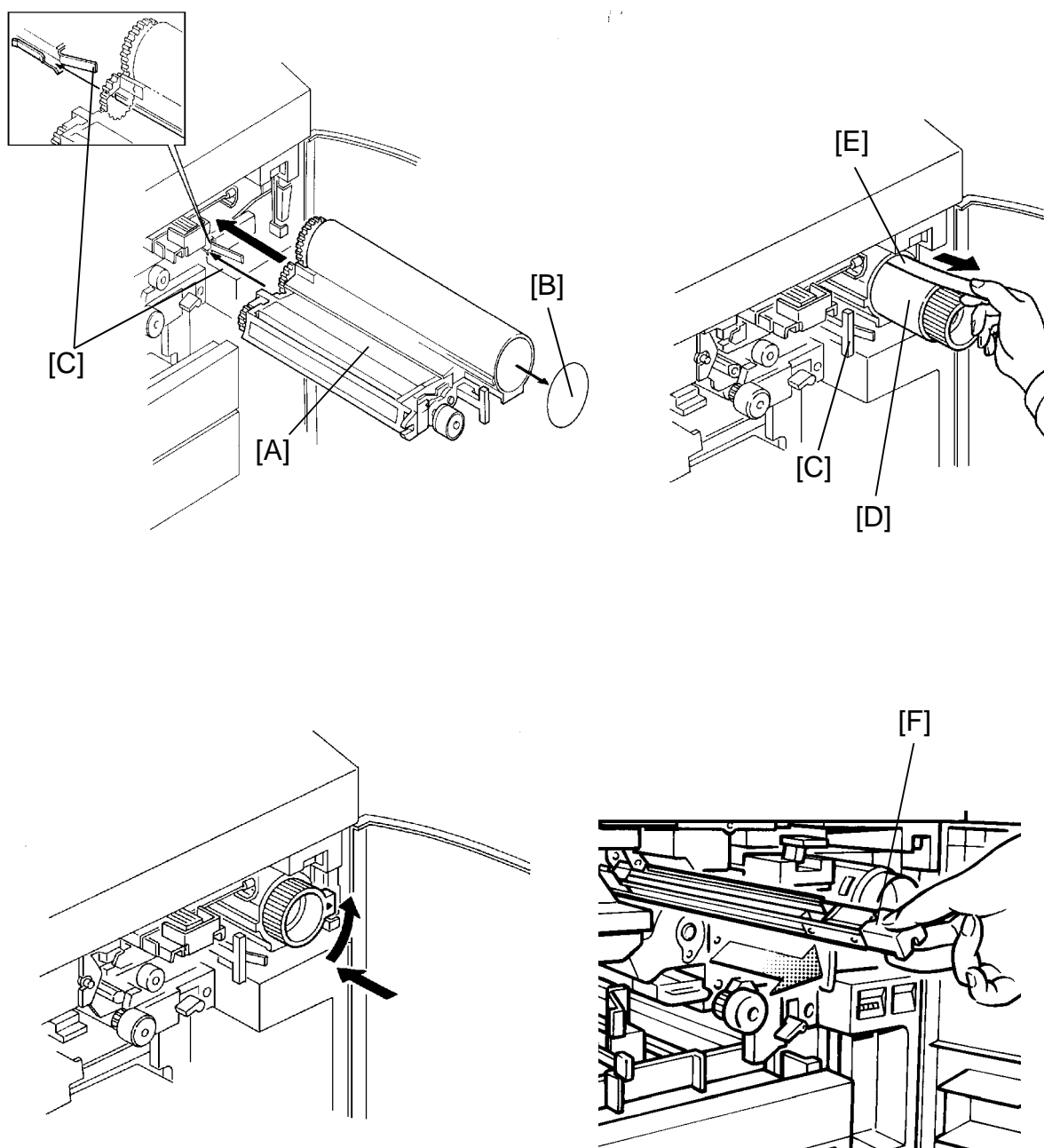
11. Push the development unit lock lever [A] to the right (to the lock position).
12. Move the development release lever [B] to the right and pull out the black development unit [C] half way. Holding the toner supply unit [D] with your right hand and the bottom of the development unit with your left hand, pull the unit all the way out . Place the unit on a clean sheet of paper.
13. Separate the toner supply unit from the development unit (3 screws).
14. Pour one pack of black developer [E] into the development unit while turning the development roller knob [F] counterclockwise. This will distribute the developer inside the unit.
15. Remount the toner supply unit on the development unit.



16. Lower the transfer & separation corona unit by pulling down the release lever [A].
17. Turn the cleaning unit release lever [B] counterclockwise to the upright position. (The cleaning unit is released from the drum.)
18. Remove the drum protective sheet [C] from the development unit opening.

CAUTION: To avoid damaging the pick-off pawls, remove the drum protective sheet by pulling the lower side as shown in the figure.

19. Turn the cleaning unit release lever clockwise to the set position.
20. Remove the cleaning blade lock plate [D].
21. Reset the transfer & separation corona unit [E].

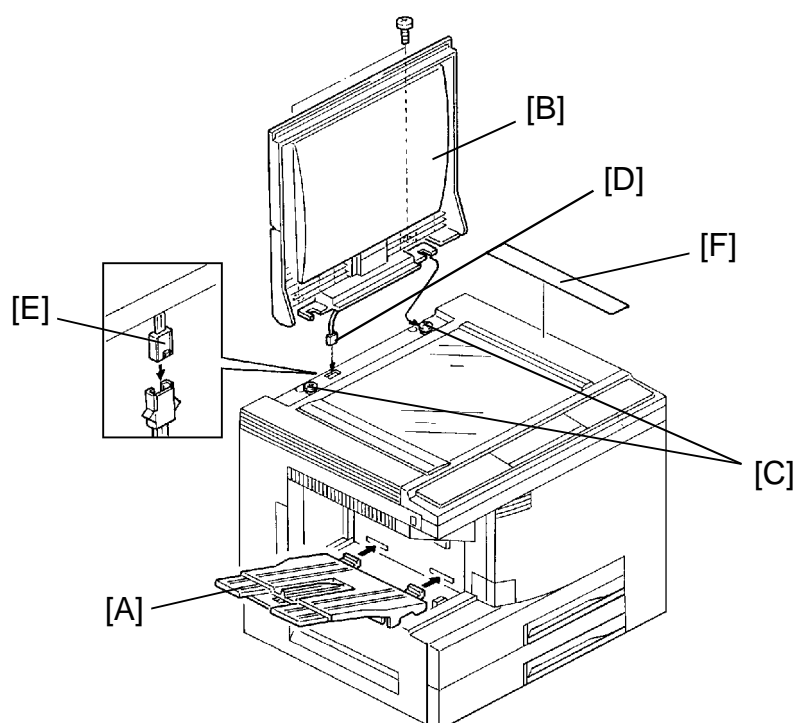


22. Install the black development unit [A] in the copier, and remove the cover sheet [B] from the toner supply unit.

NOTE: • When installing the development unit, be sure that the development unit rail is placed directly on the development unit guide rail.

- Make sure that the development release lever [C] is in its original position after the development unit is set.

23. Shake the toner cartridge [D] well from side to side. While pushing the toner cartridge in, insert it halfway into the holder with the seal [E] up.
24. As you peel off the seal, insert the cartridge completely. While pushing the toner cartridge in, turn it counterclockwise until it stops.
25. Slide out the charge corona unit [F] until it is fully extended and push it back in to the original position. Repeat this action several times.



26. Close the front door and set the copy tray [A].

NOTE: The following steps from 27 to 30 are required only to install the optional platen cover [B].

27. Remove the rear cover (remove 2 screws and loosen 2 screws).

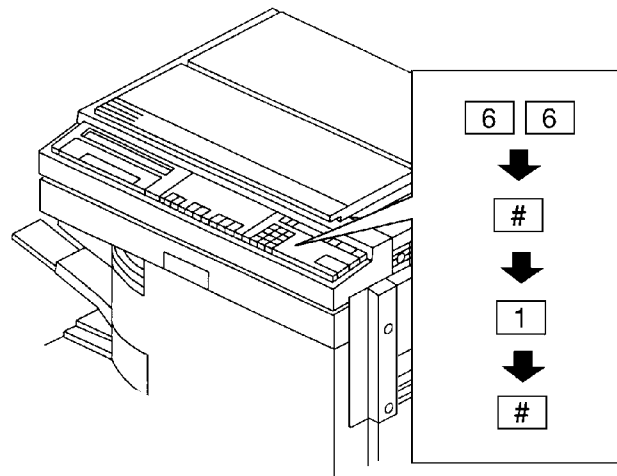
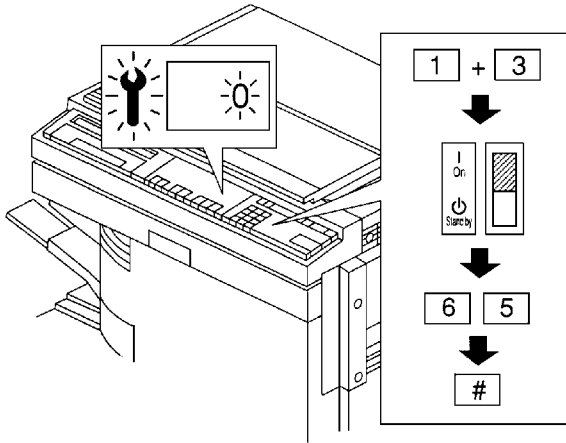
28. Install the 2 shoulder screws [C] on the top cover as shown.

29. Pass the harness [D] through the hole of the top cover and install the optional platen cover (2 screws).

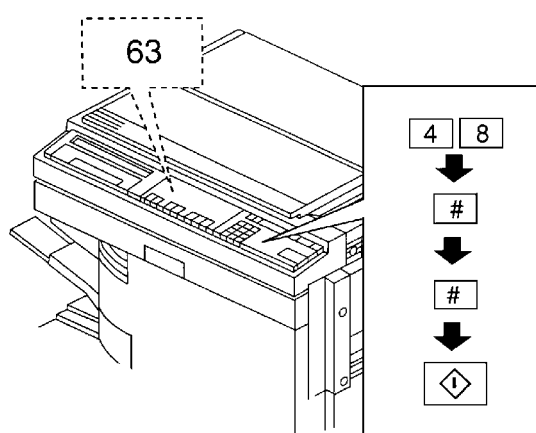
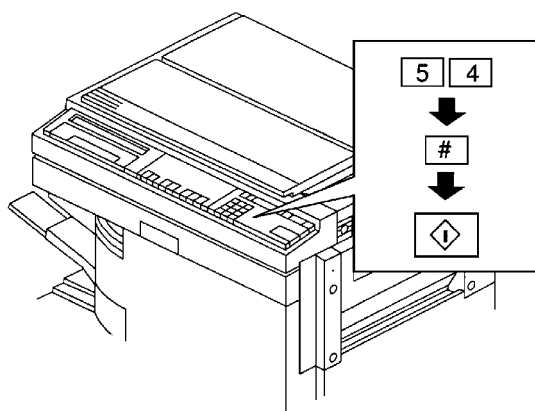
30. Couple the platen cover sensor connector [E] (3P white) with the copier and reinstall the rear cover.

31. Stick the symbols explanation decal [F] on the top cover as shown. (If the ARDF will be installed, stick the decal on the corresponding position of the ARDF.)

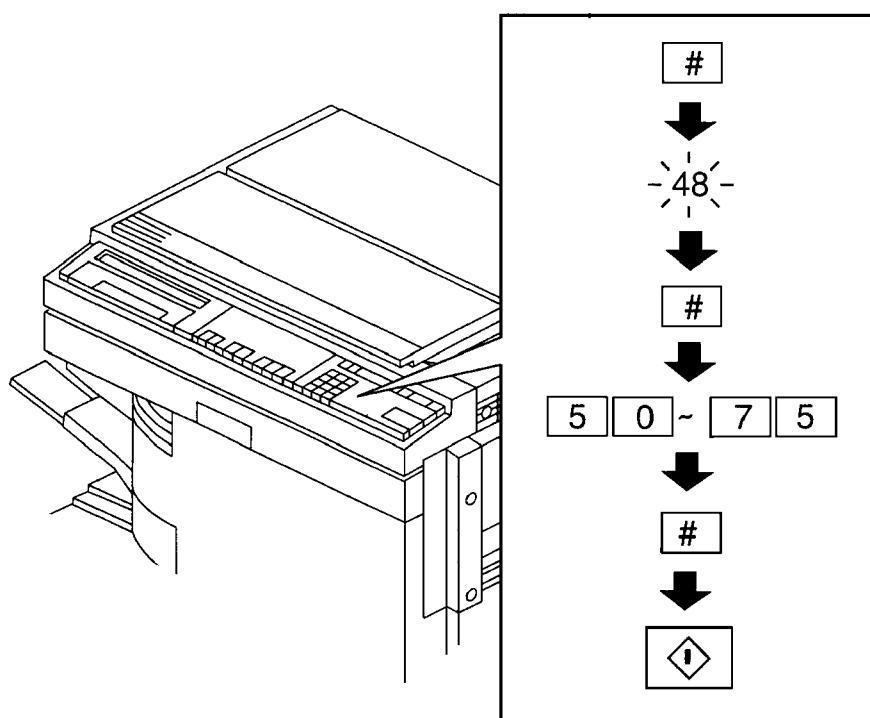
32. If local voltage is 230 V or 240 V, perform the voltage change procedure (following the installation procedure).



33. Load A3 (11" x 17") paper either in the 1st or the 2nd paper tray and plug in the machine.
34. While pressing both the "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.
35. Enter "65" using the number keys and then press the enter key.
 (The copier starts the black developer initialization, this lasts about 5 minutes, and the beeper sounds 5 times when it is finished.)
36. Enter "66" using the number keys and press the enter key.
 Press "1", then the enter key.
 (The copier performs the drum initial setting and the beeper sounds 5 times.)



37. Enter "54" using the number keys and press the enter key, then the start key.
(The copier performs ID/V sensor adjustments and the beeper sounds 2 times after 4 seconds.)
38. Enter "48" using the number keys and then press the enter key twice.
39. Set the test chart on the exposure glass.
40. Make a full size copy at the manual image density level #4 (center) after the copier has warmed up (the beeper sounds 3 times).



41. Confirm that level 2 of the gray scale is just visible on the copy.

If the image density is not correct, go through the following steps.

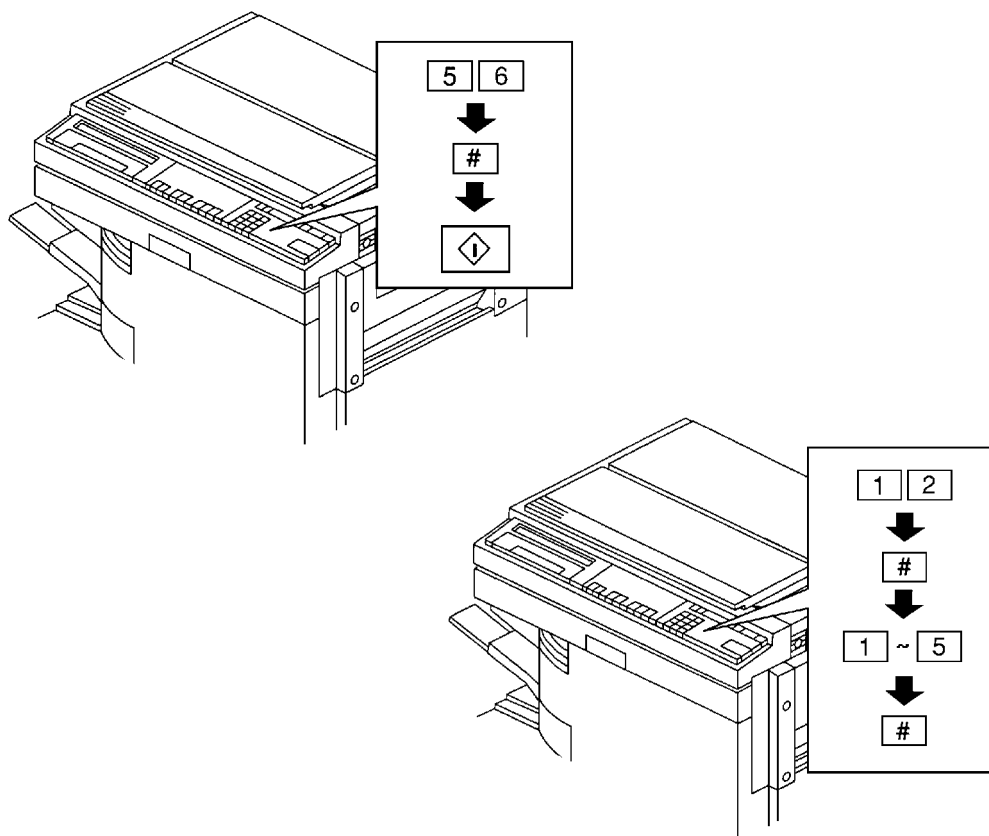
- (1) Press the enter key twice.
- (2) Change the exposure lamp voltage data displayed in the magnification ratio indicator. Use the number keys and follow these rules:

If the image density is too dark:	increase the setting
If the image density is too light:	decrease the setting

NOTE: The data can be set between 50 and 75 in 0.5 steps. (The default setting is "63".)

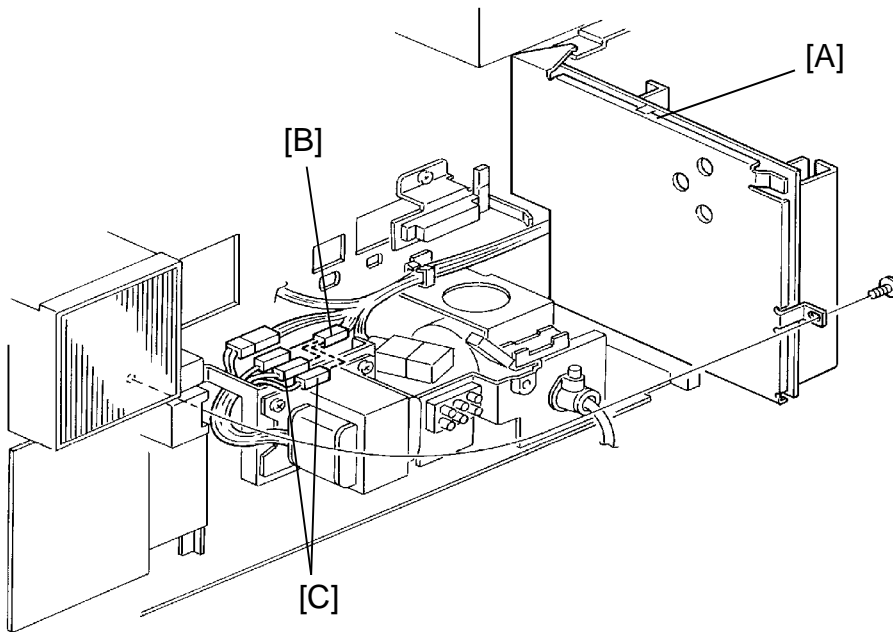
- (3) Press the enter key and then make a copy.
- (4) Confirm if the image density is correct or not.
If not, repeat the above steps from (1) to (3).

NOTE: The initial exposure lamp voltage **must** be adjusted in this step. If the adjustment is done after step 45 (the machine performs the initial VL pattern detection), the reference voltage for the exposure lamp voltage correction will be wrong throughout the drum's life.



42. Press the enter key and enter "56" using the number keys.
43. Press the enter key, then the start key.
(The copier performs the ADS sensor adjustment and the beeper sounds 2 times after 4 seconds.)
44. Enter "12" using the number keys and press the enter key.
(duplex machine only)
45. Enter the number for the desired language on the guidance display, and press the enter key. (duplex machine only).
1: English 2: French 3: German 4: Italian 5: Spanish
46. Turn the main switch off and on.
47. Enter "6" using the number keys and make copies in the full size mode.
(The copier performs the VR sensor initial check during the copy cycle.
When the copy cycle is finished, the copier performs the VL sensor initial check by lighting the exposure lamp at the home position.)
48. Check the machine operation and copy quality.
49. Tell the customers that this copier sometimes keeps turning on the exposure lamp at the home position when copy jobs are finished (the same phenomenon as in step 47).
This is normal for this copier, and this also helps maintain good copy quality.

2.2 VOLTAGE CHANGE (220V to 230/240V)



NOTE: If the voltage of electrical power supply from wall outlets is 230V or 240V, the following procedure must be done before plugging in the machine.

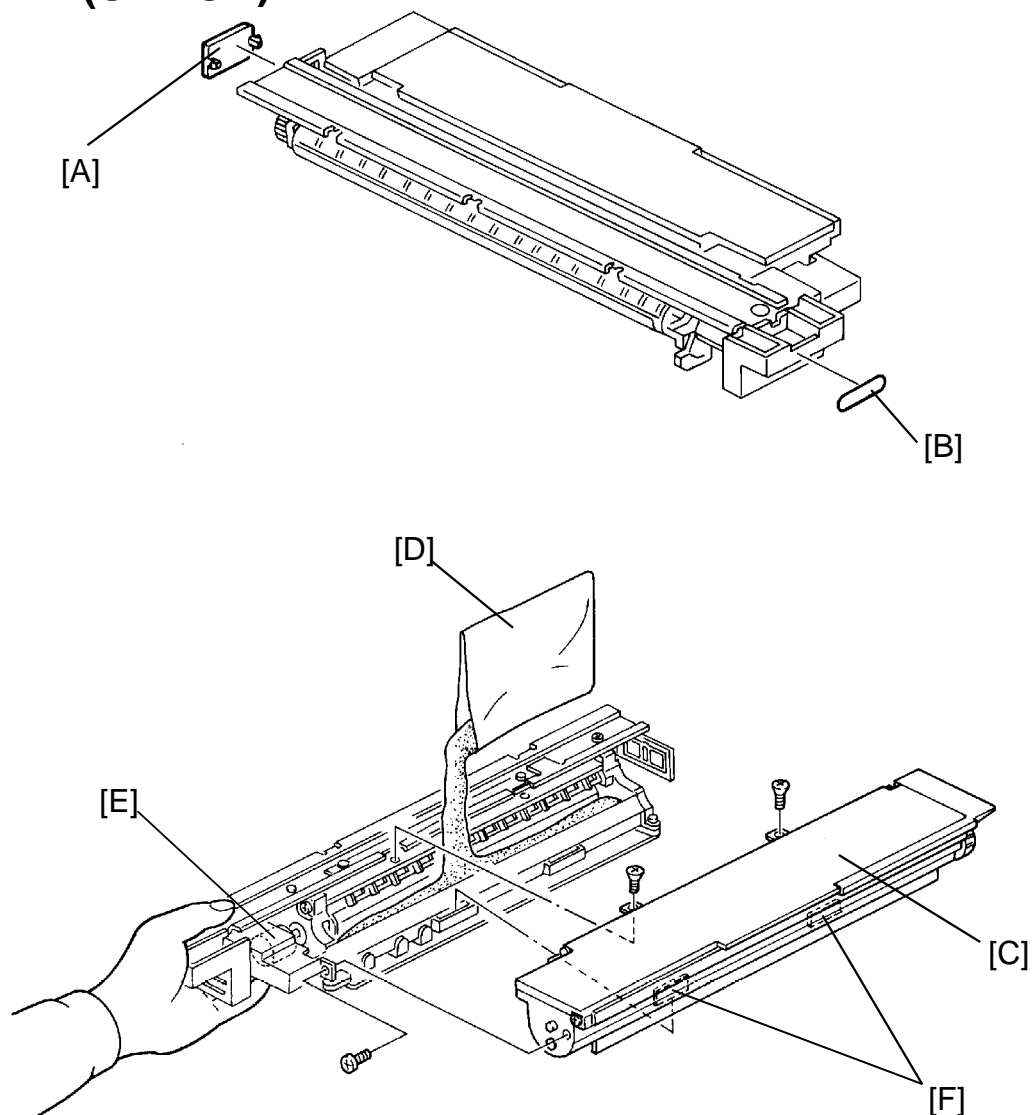
CAUTION: Make sure that the power cord of the machine is unplugged before starting the following procedure.

1. Remove the rear cover (remove 2 screws and loosen 2 screws).
2. Swing out the dc power supply board assembly [A] (1screw).
3. Disconnect the 1P connector [B] of the ac main harness and reconnect it to the appropriate voltage connector [C] of the main transformer.

NOTE: Each 1P connector of the main transformer has its voltage rating printed on it.

4. Reassemble the copier.

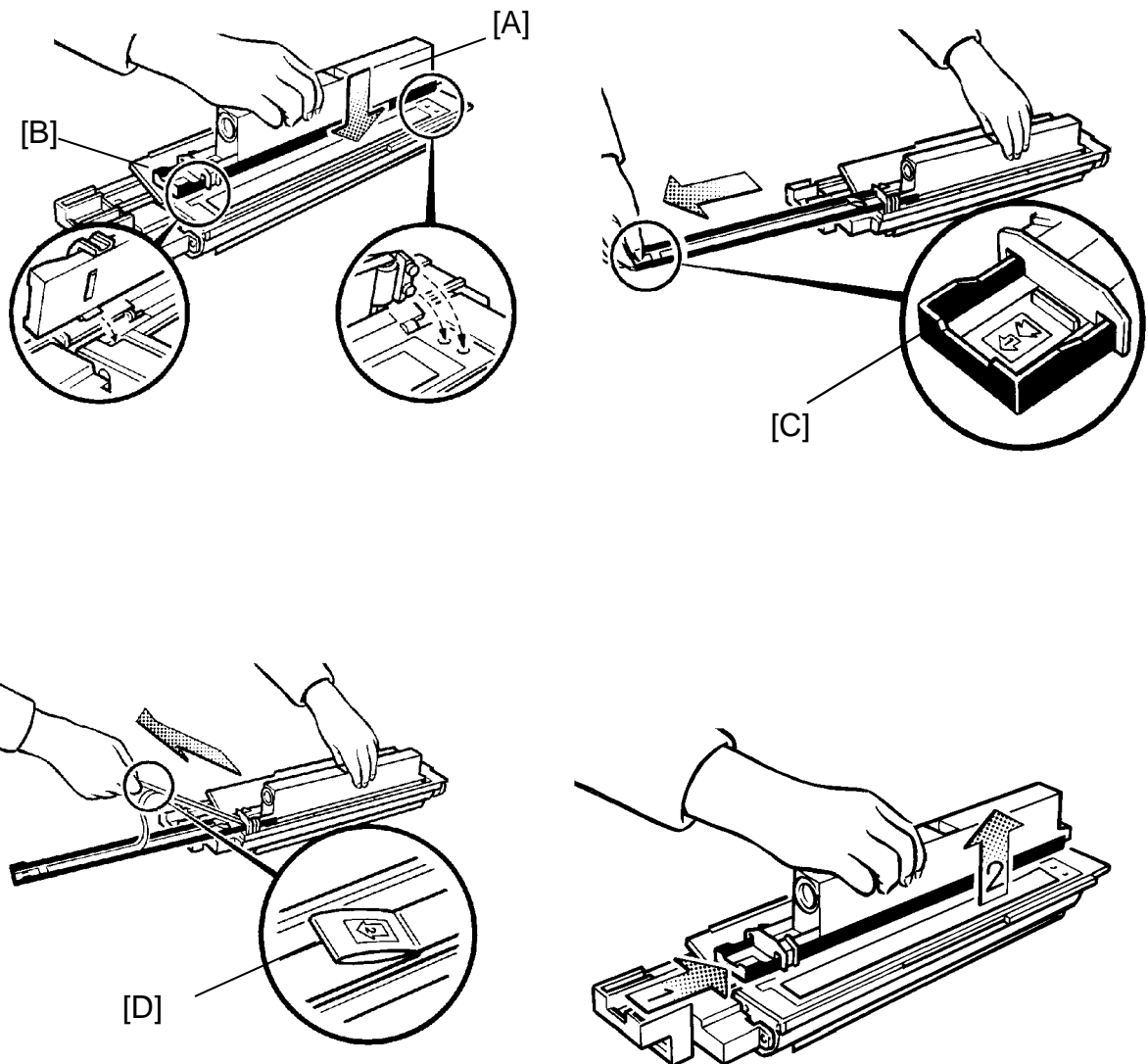
2.3 COLOR DEVELOPMENT UNIT INSTALLATION (OPTION)



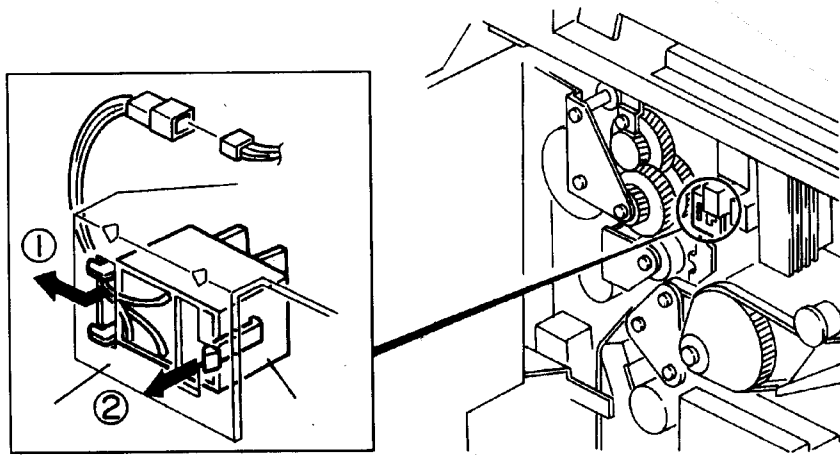
NOTE: This is a universal color development unit for red, blue, and green developer and toner.

1. Install the appropriate color detection plate [A] on the rear bracket of the color development unit. (The plate color corresponds to the developer and toner color.)
2. Stick the appropriate color decal [B] on the development unit handle.
3. Separate the toner supply unit [C] from the development unit (3 screws).
4. Pour one bag of color developer [D] into the development unit while turning the development roller knob [E] counterclockwise. This will distribute the developer evenly inside the unit.
5. Remount the toner supply unit on the development unit.

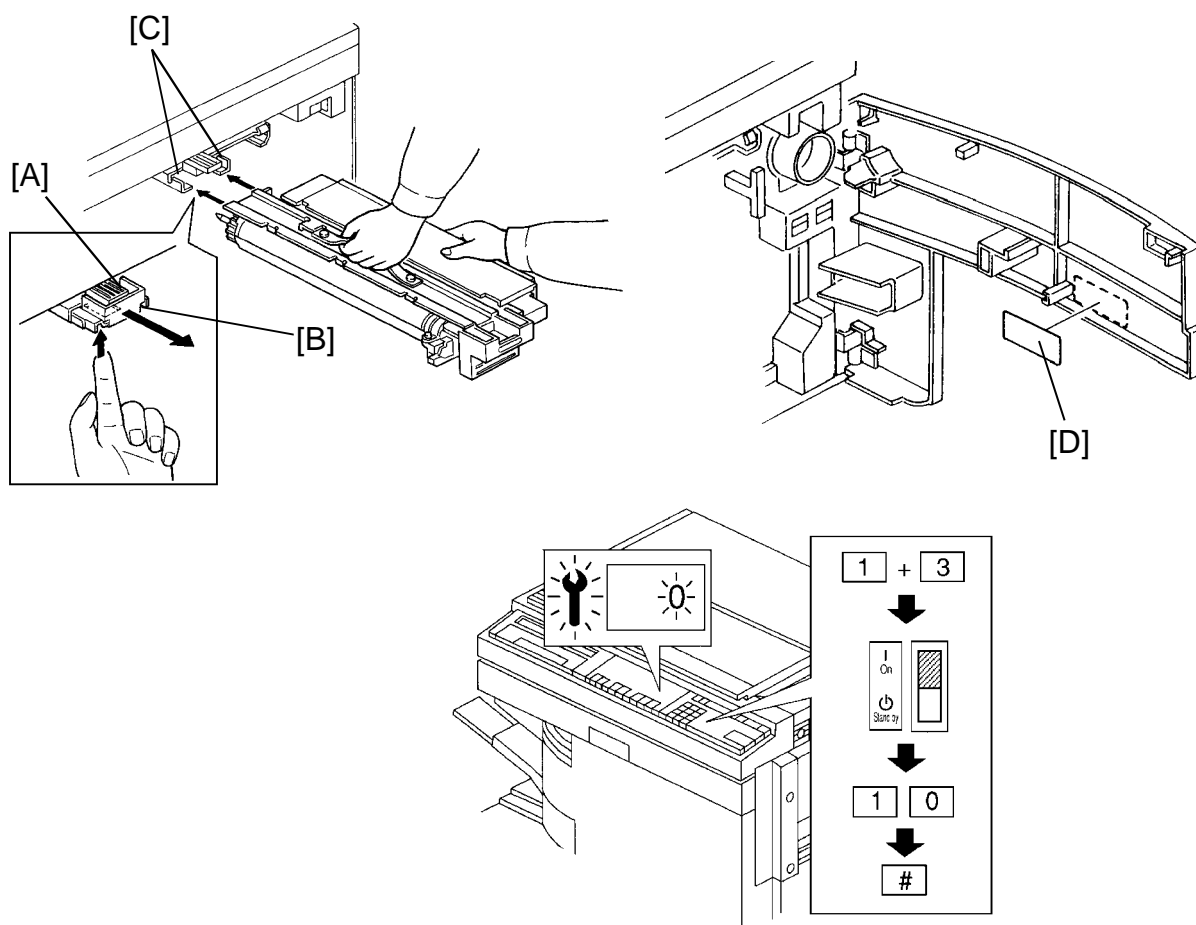
NOTE: When setting the toner supply unit, be sure that the 2 plates of the toner supply unit [F] fit in the positioning grooves.



6. Shake the color toner cartridge [A].
7. Open the color toner supply unit cover [B] and set the color toner cartridge on the color toner supply unit as shown.
8. Holding the center part of the cartridge, push down and pull out the slide plate [C] until it stops.
9. Pull out the seal [D] until the red line is visible.
10. Gently tap the cartridge so that all the toner in the cartridge falls inside the toner supply unit.
11. Return the slide plate to its original position and remove the cartridge.
12. Close the color toner supply unit cover.

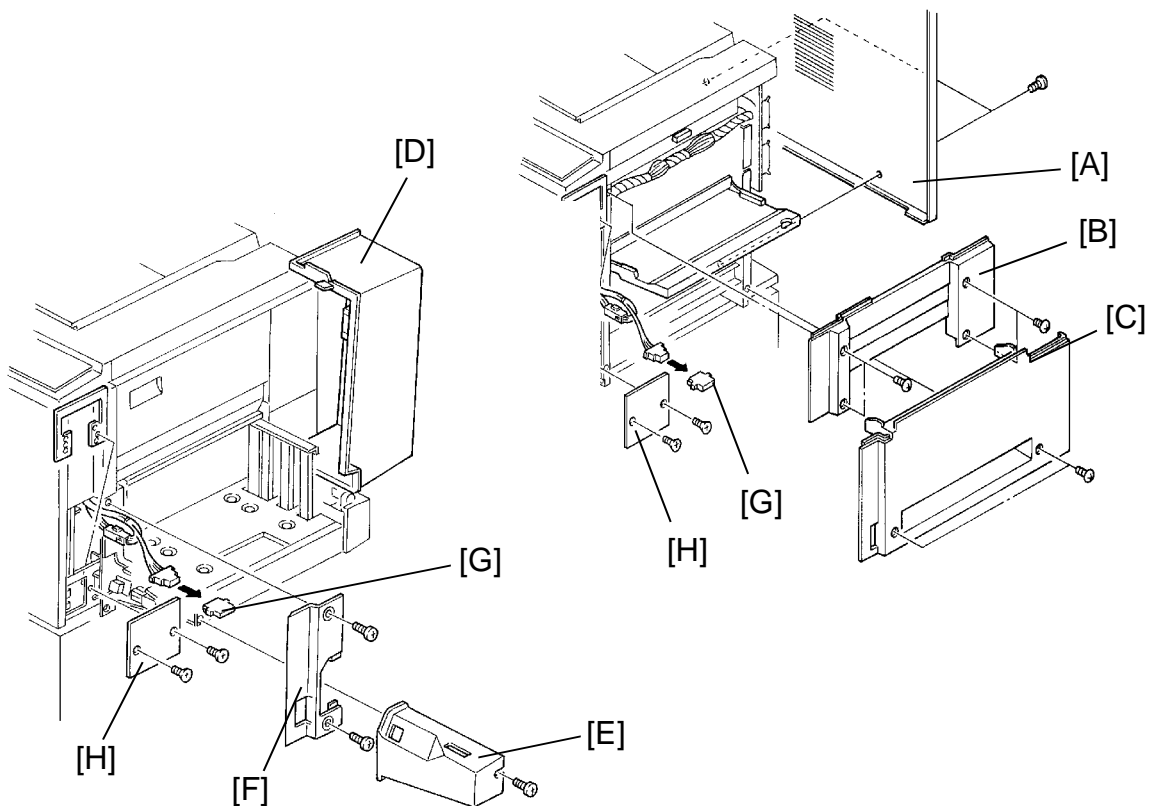


13. Remove the copier rear cover (loosen 2 screws and remove 2 screws).
14. Swing the main control board assembly out (1 screw).
15. Install the color switch [A] on the color switch bracket [B] as illustrated.
16. Connect the color switch connector [C] to the DC harness (3P - brown).
17. Reassemble



18. Open the copier front door.
19. While lifting the color development unit lock lever [A], pull out the cover plate [B].
20. Holding the strap of the color development unit with your left hand, hold the toner supply unit with your right hand, and insert the development unit along the guide rails [C].
21. While lifting the color development unit lock lever, push the unit in until it stops.
22. Stick the decal [D] on the copier front door as shown and close the copier front door.
23. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.
24. Enter "10" using the number keys and then press the enter key.
 (The copier starts the color developer initialization, this lasts about 1 minute, and the beeper sounds 5 times)
25. Turn the main switch off and on.
26. Check the color copy quality.

2.4 KEY COUNTER HOLDER INSTALLATION (OPTION)



CAUTION: Make sure that the main switch is turned off.

[Machines without LCT]

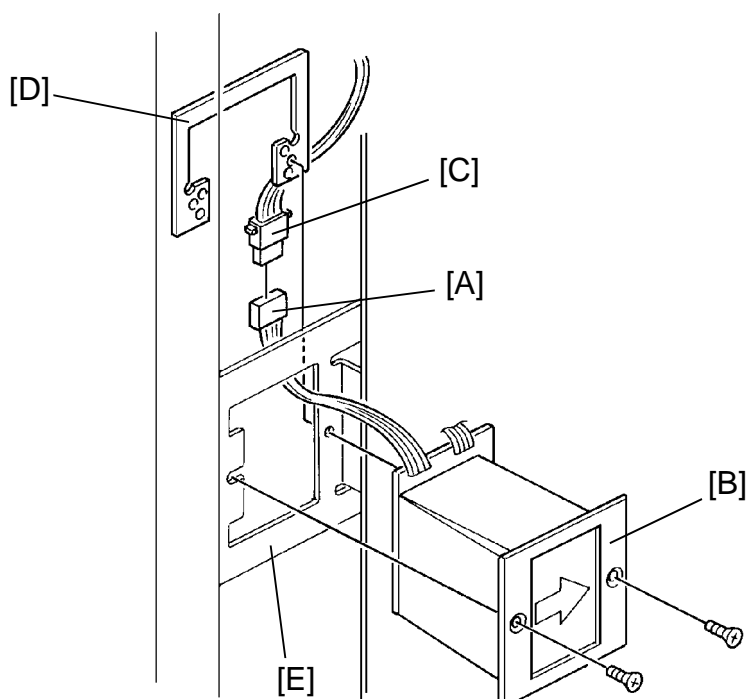
1. Remove the rear cover [A] (remove 2 screws and loosen 2 screws).
2. Open the by-pass feed table and remove the right upper cover [B] (4 screws).
3. Remove the right lower cover [C] (2 screws).
-- Go to step 4.

[Machines with LCT]

1. Lift up the LCT top cover [D] and remove the LCT front cover [E] (1 screw).
2. Remove the right front lower cover [F] (2 screws).
-- Go to step 4.

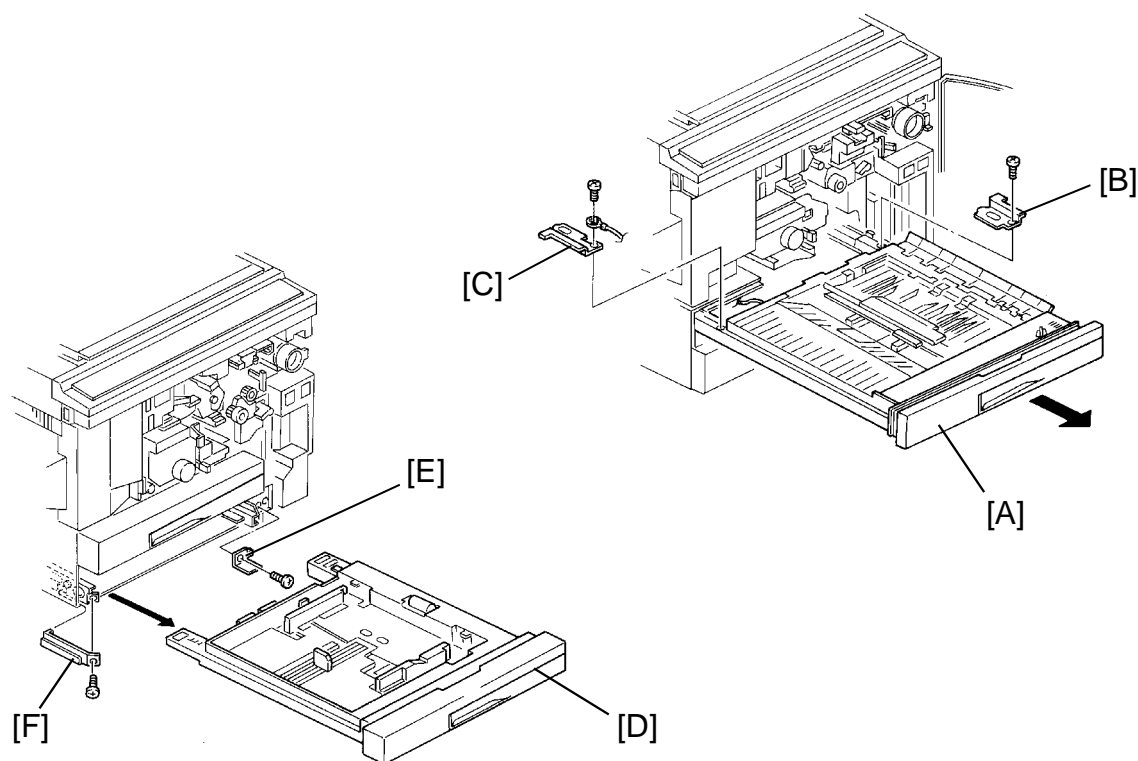
[Common procedure]

4. Remove the shorting connector [G] from the key counter connector.
5. Remove the key counter cover [H] from the key counter holder bracket (2 screws).



6. Pass the 4P connector [A] of the key counter holder [B] through the key counter holder access hole and couple it with the key counter connector [C] of the copier.
 7. Hold the fixing plate [D] on the inside of the key counter holder bracket [E] and insert the key counter holder.
 8. Align the holes in the fixing plate with the mounting holes of the key counter holder and secure the key counter holder (2 screws).
- NOTE:** The fixing plate has three different hole sizes. Use the holes that match those on the key counter holder that you are installing.
9. Reinstall all the covers and check the key counter operation.

2.5 TRAY HEATER INSTALLATION (OPTION)



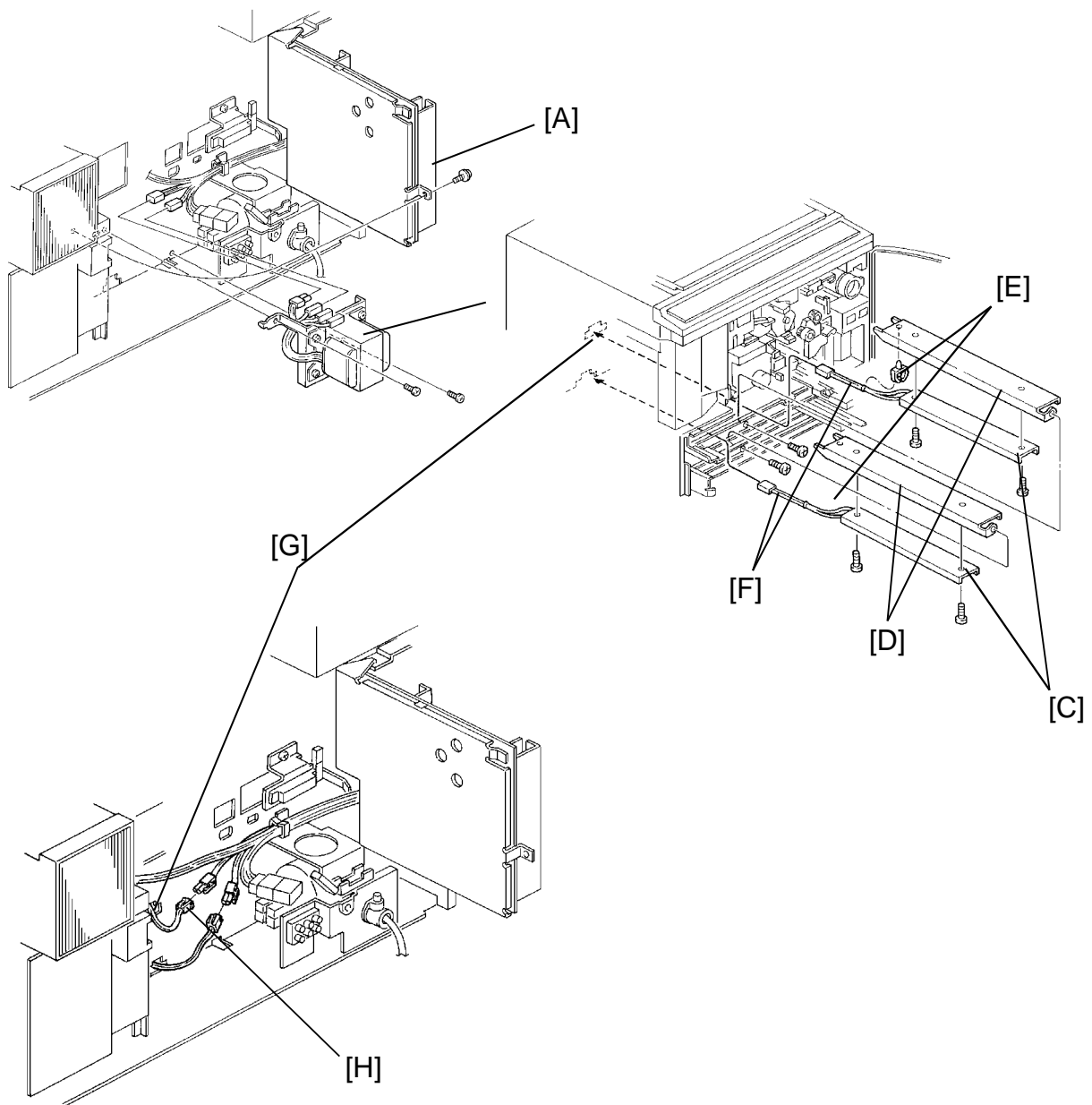
NOTE: The optional tray heaters keep copy paper dry. In humid environments, copy paper may crease as it comes out of the fusing unit. The heaters are available as service parts.

Required parts: P/N A0699500: Tray Heater Kit --115V 2 sets
 P/N A0699501: Tray Heater Kit --230V 2 sets

The contents of the kits are as follows:	Tray heater	1 piece
	Tray heater bracket	1 piece
	Wire saddle	1 piece
	Philips pan head screw	3 pieces
	Decal: High Temp.	1 piece

CAUTION: Unplug the copier power cord before starting the following procedure.

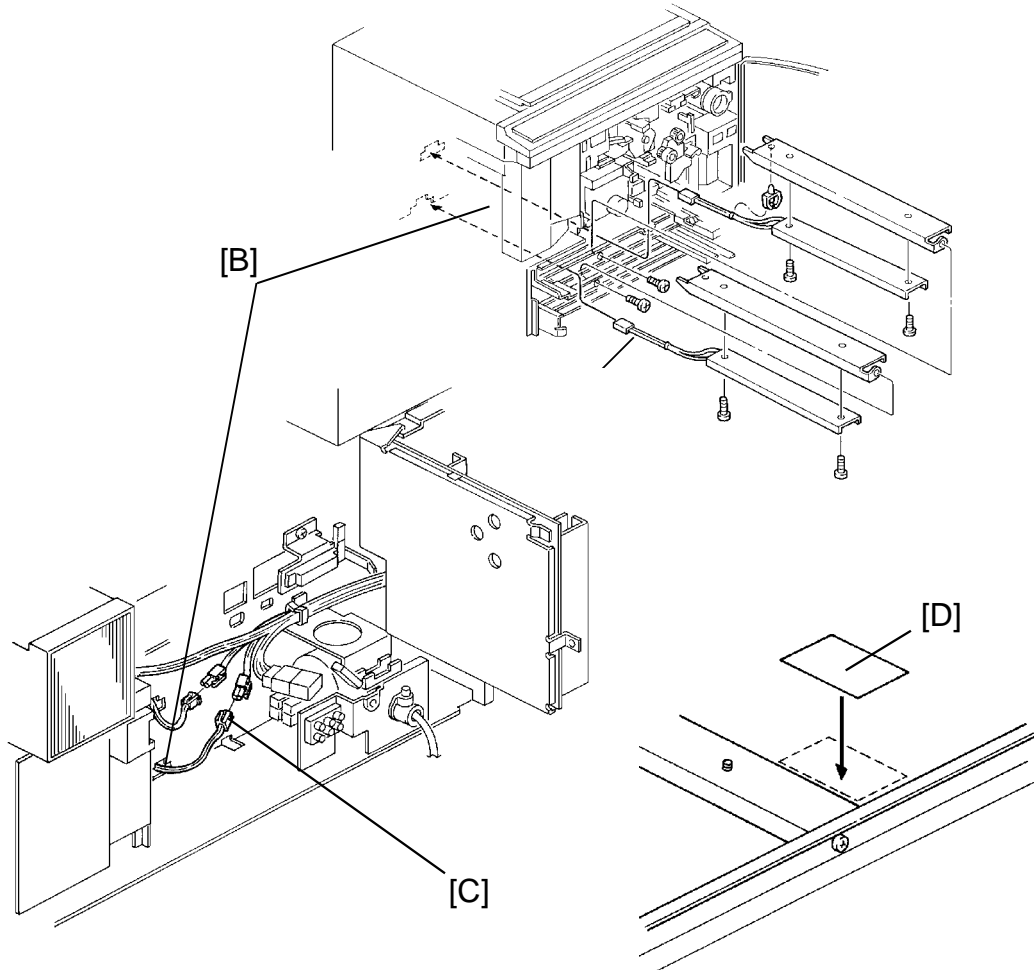
1. Open the copier front door.
2. Pull out the duplex tray [A] and remove the tray stopper brackets [B], [C] on both side rails as shown (1 screw each), and then remove the duplex tray from the copier [duplex machines only].
3. Pull out the paper tray [D] and remove the tray stopper brackets [E], [F] on both sides as shown (1 screw each) and then remove the paper tray from the copier [both paper trays for non-duplex machines].



4. Remove the rear cover (remove 2 screws and loosen 2 screws).
5. Swing out the dc power supply board assembly [A] (1 screw).
6. Remove the main transformer assembly [B] (2 screws and 2 connectors).
7. Fix the tray heater [C] on the tray heater bracket [D] (2 screws), and set the wire saddle [E] and the heater harness [F] on the bracket as shown. Make 2 sets of this assembly.

[Upper tray heater]

8. Pass the heater harness through the upper heater access hole [G] and install the tray heater assembly as shown (1 screw at the front).
9. Connect the heater connector [H] with the copier as shown (2P red).



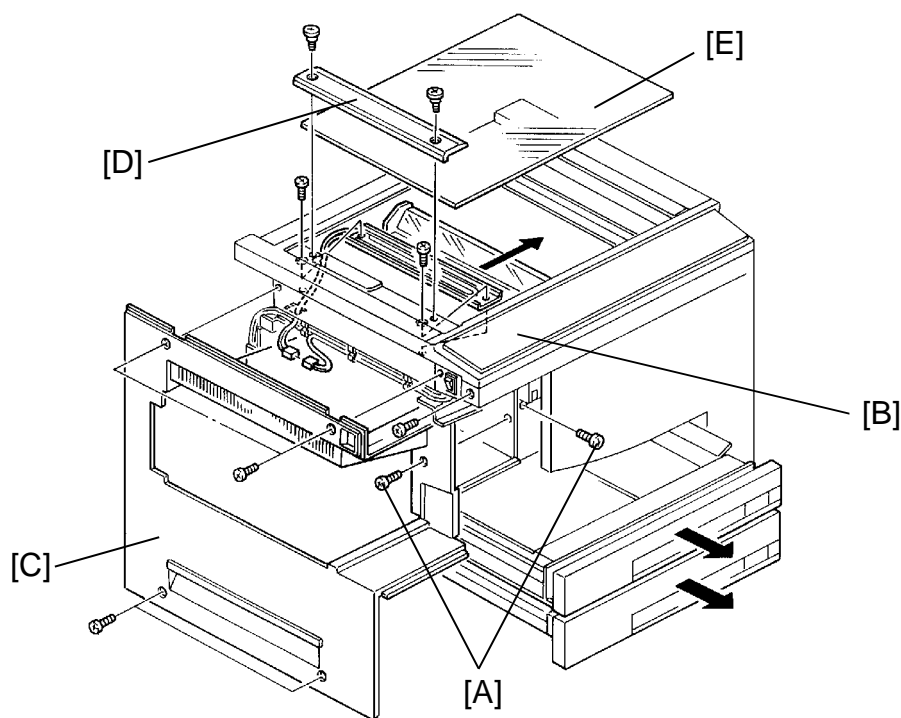
[Lower tray heater]

10. Pass the heater harness [A] through the lower heater access hole [B] and install the tray heater assembly as shown (1 screw at the front).
11. Connect the heater connector [C] with the copier as shown (2P red).

[Upper and Lower tray heaters]

12. Stick the warning high temp. decal [D] on the plate, to the right of the tray heater bracket as shown.
13. Reassemble the copier.
14. Tell the customer that the copier main switch should be turned off and the power cord should not be unplugged at night. Otherwise, the tray heaters will not function.

2.6 OPTICS ANTI-CONDENSATION HEATER
INSTALLATION (OPTION)



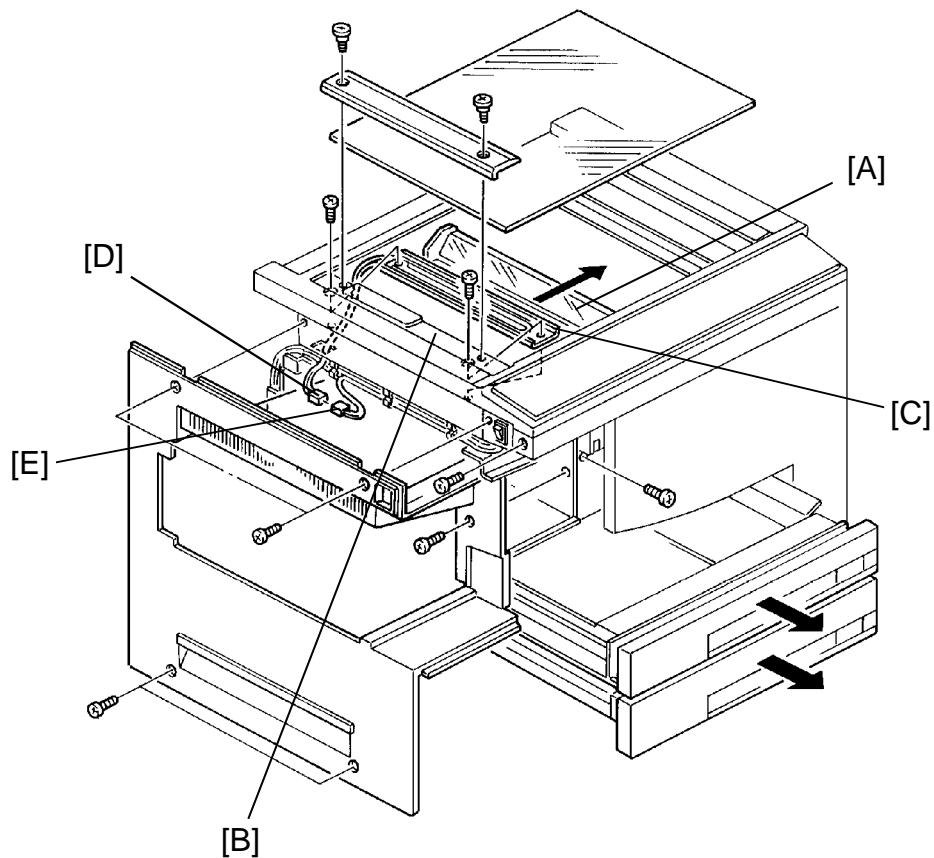
NOTE: The optional optics anti-condensation heater keeps water from condensing on the copier’s mirrors. Such condensation occurs under cold and high humidity conditions, and causes the first few copies of the day to be black or dark. The heater is available as a service part.

Required parts:

Optics anti-condensation heater	(P/N AX400008 for 115V area, P/N AX400009 for 220/230/240V area)	1 piece
Philips pan head screw (M4 x 8)	(P/N 04340080W)	2 pieces

CAUTION: Unplug the copier power cord before starting the following procedure.

1. Open the front door and pull out the 1st and 2nd (or the paper and duplex) trays.
2. Remove the left and front side screws [A] of the front upper cover [B] and remove the left cover [C] (5 screws).
3. Remove the left scale [D] (2 shoulder screws) and the exposure glass [E].



4. Move the 1st and 2nd scanners [A] to the left so that you can access under the left scale bracket [B].
5. Install the optics anti-condensation heater [C] on the optics bottom plate as shown with 2 screws.
6. Pass the heater connector [D] through the heater harness access hole and connect it with the ac harness connector [E] (2P red) as shown.
7. Reassemble the copier.
8. Tell the customer that the copier main switch should be turned off and the power cord should not be unplugged at night. Otherwise, the optics anti-condensation heater will not function.

2.7 SORTER ADAPTER INSTALLATION (OPTION)

2.7.1 Accessory Check

1. Cover Bracket 1

2. Gear Assembly 1

3. Cover Plate 1

4. Hinge Bracket 1

5. Front Door 1

6. Hinge Pin 2

7. Philips Pan Head Screw M4 x 8 10

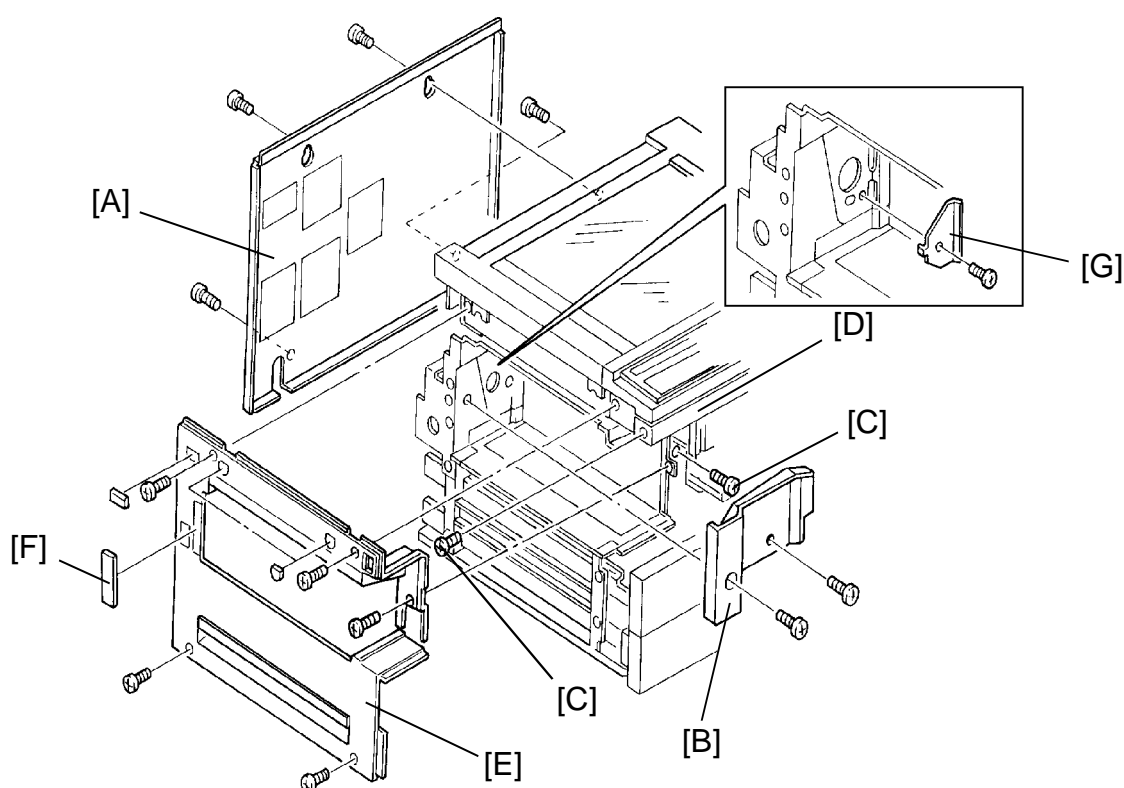
8. Philips Pan Head Screw with Washer 1

9. Installation Procedure..... 1

10. New Equipment Condition Report

 (--17 machine only) 1

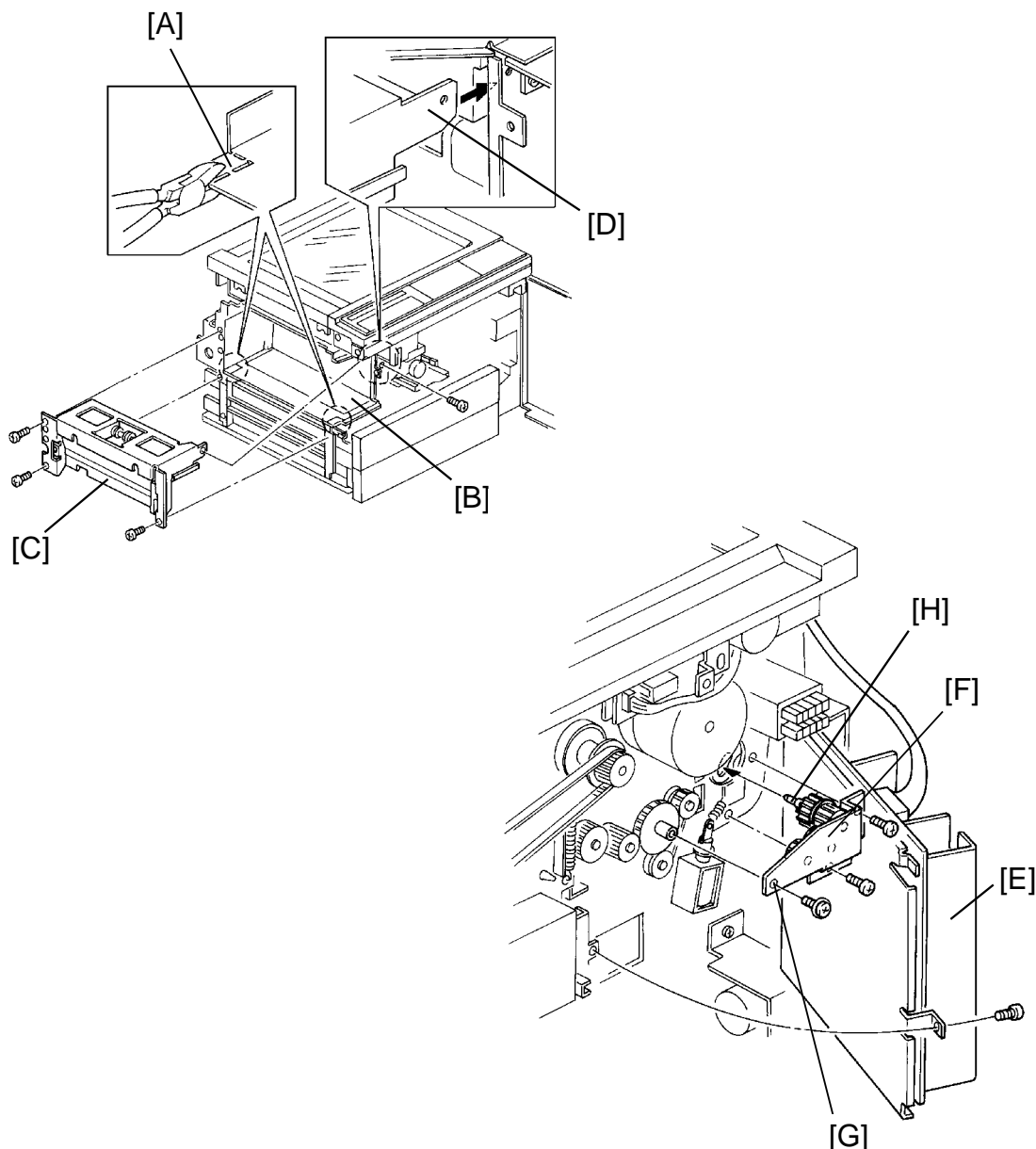
2.7.2 Installation Procedure



NOTE: The sorter adapter is required to transport copy papers from the copier exit rollers to the sorter entrance guide plates. It is required when the mini-sorter (A423), midi-sorter (A411), or sorter stapler (A366) is installed.

CAUTION: unplug the copier power cord before starting the following procedure.

1. Remove the copier rear cover [A] (remove 2 screws and loosen 2 screws) and the left small cover [B] (2 screws).
2. Open the front door and pull out the 1st and 2nd (or the paper and duplex) trays.
3. Remove the left and front side screws [C] of the front upper cover [D] and remove the left cover [E] (5 screws).
4. Remove the cover plate [F] from the left cover by cutting it with cutting pliers.
5. Install the cover bracket [G] on the rear side frame as shown (1 screw).



6. Remove the 2 corners [A] of the left bottom cover [B] as shown with the cutting pliers.

7. Install the sorter adapter [C] (4 screws) on the paper exit section of the copier.

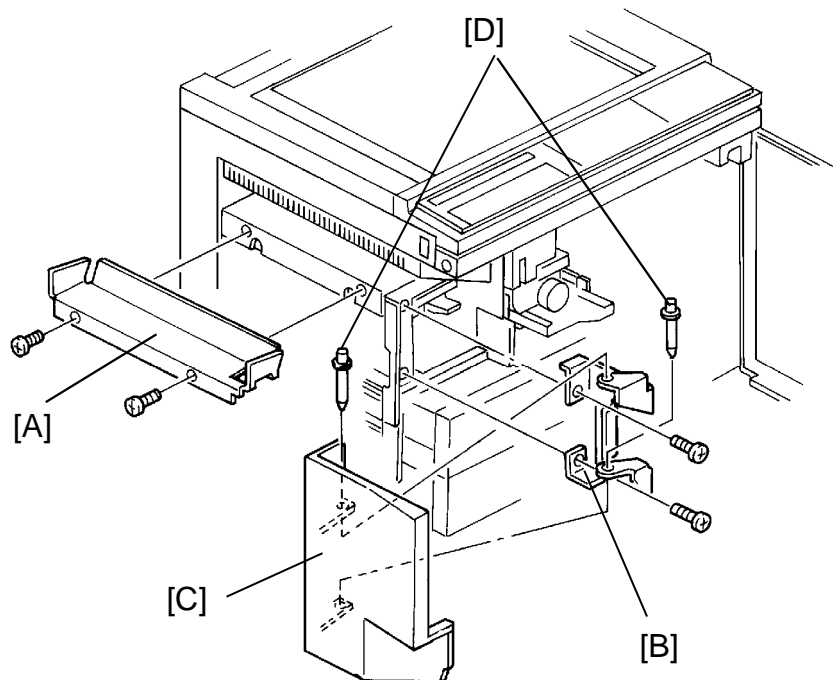
- NOTE:**
- The front upper right part of the sorter adapter bracket [D] should be placed in-between the copier front side plate and the upper exit cover.
 - The top and the bottom screw holes of the rear bracket should be used for securing the sorter adapter.

8. Swing out the dc power supply board assembly [E] (1 screw).

9. Install the gear assembly [F] (3 screws) on the copier rear side plate as shown.

- NOTE:** The positioning hole of the gear assembly bracket [G] should fit over the positioning stud of the copier drive gear. Also, the positioning pin of the gear assembly [H] should be placed in the positioning hole of the sorter adapter bracket.

10. Reinstall the dc power supply board.



11. Reinstall the copier left cover and secure the left and front sides of the front upper cover.

12. Install the cover plate [A] (2 screws) on the sorter adapter.

NOTE: If the sorter stapler is to be installed locate a mylar guide in the ST22 packing and install it behind the cover plate [A].

13. Install the hinge bracket [B] (2 screws) on the front side plate of the sorter adapter.

14. Install the front door [C] on the hinge bracket with the 2 hinge pins [D].

SECTION 4

SERVICE TABLES

1. SERVICE REMARKS

1.1 HANDLING THE DRUM

The organic photoconductor drum is comparatively more sensitive to light and ammonia gas than a selenium drum.

1. Never expose the drum to direct sunlight.
2. Never touch the drum surface with bare hands. When the drum surface is touched with a finger or becomes dirty, wipe with a dry cloth or clean with wet cotton. Wipe with a dry cloth after cleaning with wet cotton.
3. Never use alcohol to clean the drum; alcohol dissolves the drum surface.
4. Store the drum in a cool, dry place away from heat.
5. Take care not to scratch the drum as the drum layer is thin and is easily damaged.
6. Never expose the drum to corrosive gases such as ammonia gas.
7. Always keep the drum in the protective sheet when keeping the drum unit, or the drum itself, out of the copier. Doing so avoids exposing the drum to bright light or direct sunlight. This will protect the drum from light fatigue.
8. Before inserting or pulling out the drum unit, the following should be performed to avoid damaging the drum:
 - a) Remove the black and color development units
 - b) Remove the cleaning unit
 - c) Remove the charge corona unit
 - d) Lower the T&S corona unit
9. Drum initial setting (SP66) must be performed when a new drum is installed.

1.2 DRUM UNIT

1. Make sure that the drum unit is set in position and secured with the screw when the main switch is turned on. If the drum unit is loose, poor contact of the drum connectors may cause electrical noise, resulting in unexpected malfunction (RAM data change is the worst case).
2. Clean the green color filter on the drum unit top plate with a dry cloth and discharge static electricity by touching it with your finger. Do not clean the filter with water or any other cleaning solution as the filter has an antistatic coating.

1.3 CHARGE CORONA

1. Clean the corona wires by sliding the corona unit in and out. (The cleaner pads come into contact with the corona wires when the corona unit is slid all the way out.) The wires can be also cleaned with water. Do not use sandpaper or a solvent.
2. Clean the charge corona casing with water first to remove NOx. Then clean it with alcohol if any toner still remains on the casing.
3. Clean the end blocks with a blower brush first to remove toner and paper dust. Then clean it with alcohol if any toner still remains on it.
4. Do not touch the corona wires with oily bare hands. Oil stains may cause white bands on copies.
5. Make sure that the corona wires are correctly positioned between the cleaner pads and that there is no foreign material (iron filings, etc.) on the casing.
6. When installing new corona wires, do not bend or scratch the wire surface to avoid any uneven charge. Also be sure that the corona wires are correctly positioned in the rear end block and that the damper rings are correctly positioned in the front end block. (See charge corona wire replacement.)
7. Clean the charge grid plate with a blower brush (not with a cloth).
8. Do not touch the charge grid plate with oily bare hands. Also, do not bend the charge grid plate or make any dent on it. Doing so may cause uneven charge.
9. The corona wire height should only be adjusted when the front end block is replaced.

1.4 OPTICS

1. When installing the exposure glass, make sure that the red mark on the edge of the glass faces up. This side has received a special treatment to be smoother and generate less static electricity. This is especially important when the ARDF is installed.
2. When moving the 1st or 2nd scanners, always hold them at the center. Move them slowly, carefully, and gently. Abrupt movement may cause the belt to slip into the wrong position on the scanner drive pulleys.
3. Do not bend or crease the exposure lamp flat cable. Be careful of this especially when reinstalling the lens housing cover.
4. When reinstalling the lens housing cover, make sure that the light shielding mylar on the original length sensor does not interfere with the light path to the ADS sensor board.
5. Do not touch the following parts with bare hands:
 - a) Reflectors
 - b) Exposure lamp
 - c) Mirrors and lens
 - d) ID sensor and VL patterns
6. To clean the mirrors and lens, only use a clean soft cloth damped with alcohol or water.
7. Do not adjust uneven exposure by changing the exposure lamp position but by using the exposure adjusting plates. Adjusting the lamp position is very difficult because the filament cannot be seen clearly as the lamp is frosted.
8. Adjust the exposure lamp voltage (SP48) only when the drum initial setting (SP66) is performed.
9. Do not remove the lens housing guide plate and the 3rd scanner guide plate. They were positioned on the optics base plate with a special jig at the factory.

1.5 ERASE LAMP

1. A narrower lead edge erase margin increases the possibility of fusing jams. The margin should be at least 1.0 mm.
2. After cleaning the erase lamp unit, rub it lightly with your finger to discharge any static electricity on the unit surface.
3. Make sure that the erase lamp setting (SP84) is correct. Otherwise, ID sensor abnormal condition will occur.

1.6 DEVELOPMENT UNIT

1. Be careful not to nick or scratch the development roller sleeve.
2. Place the development unit on a sheet of paper after removing it from the copier. This prevents any small metal objects (staples, clips, E-rings, etc.) from being attracted to the development roller and getting inside the unit.
3. Be careful not to bend the bias terminals.
4. Clean the drive gears after removing the used developer.
5. Never load different types of developer or toner (black and color) into the development unit. Doing so will cause poor copy image and toner scattering inside the copier.
6. Developer initialization is necessary when new developer is loaded.
 - a) Black developer initialize (SP65)
 - b) Color developer initialize (SP10)
7. Adjust the black development bias voltage (SP37) together with the exposure lamp voltage (SP48) if necessary. This should be done only when the drum initial setting (SP66) is performed. The results of adjusting the black bias voltage with the used drum will be compensated by the exposure lamp voltage when the VL pattern detections are performed. The color development bias voltage (SP79) can be adjusted any time.
8. The doctor gaps must not be adjusted in the field as they are strictly adjusted at the factory.

1.7 TRANSFER AND SEPARATION

1. Clean the T&S corona unit casing with water then with alcohol if necessary.
2. Clean the separation corona wire only with dry cloth as it is carbon coated.
3. Clean the end blocks with a blower brush and alcohol.

1.8 CLEANING UNIT

1. When servicing the cleaning unit, be careful not to damage the edge of the cleaning blade.
2. Do not touch the cleaning brush with bare hands.
3. Before pulling out the cleaning unit, place a sheet of paper under it to catch any toner falling from the unit.
4. Empty the used toner tank in the following cases:
 - a) At PM
 - b) When the used toner tank is filled more than half of its capacity. (Of course it is better to do it at every visit.)
 - c) When an ID sensor abnormal condition happens. (Used toner tank overflow cannot be detected.)
5. Perform the toner end counter clear (SP83) whenever the used toner tank is emptied.
6. If the toner end counter (SP58) is cleared by accident (by SP83 or any other reason), empty the used toner tank.

1.9 PRE-TRANSFER AND QUENCHING LAMPS

1. When removing the PTL filter to clean it, take out the drum unit first to prevent any damage on the drum.
2. When reinstalling the PTL filter, make sure that the filter is correctly positioned.
3. After cleaning the quenching lamp filter, rub it lightly with your finger to discharge any static electricity on the filter.

1.10 PAPER FEED

1. Do not touch the pick-up, feed, separation rollers and the friction pads with oily bare hands.
2. The side fences and the rear fence of the paper trays should be positioned correctly to align with the actual paper size. Otherwise, paper misfeeds may occur.
3. The friction pad should be replaced together with the friction pad holder and pad entrance seal as an assembly.
4. The friction pad assembly and the paper feed roller should be replaced as a set to maintain paper feed ability. (A worn out feed roller will provide incorrect friction pad pressure.)
5. The friction pad holder mounting bracket must be reinstalled on the original paper tray. Because the friction pad pressure is adjusted for each paper feed station independently at the factory.
6. The paper tray with the friction pad mechanism must be reinstalled at the original paper feeding station.
7. The friction pad pressure should not be adjusted in the field.

1.11 FUSING UNIT

1. Be careful not to damage the edges of the hot roller strippers or their tension springs.
2. Do not touch the fusing lamp with bare hands.
3. Make sure that the fusing lamp is positioned correctly and that it does not touch the inner surface of the hot roller.

2. SERVICE PROGRAM MODE

2.1 SERVICE PROGRAM MODE OPERATION

The service program (SP) mode is used to check electrical data, change mode, and adjust settings.

2.1.1 Service Program Access Procedure

There are three ways to access the SP mode.

- 1: By key operation (for users and sales representatives).
- 2: By turning on the main switch while holding down number keys.
(for service representatives for normal SP modes).
- 3: By turning on the main switch while holding down mode keys (for service representatives for memory all clear mode (SP99) and normal SP modes).

Access Procedure 1: Key operation

Accessible SP mode numbers:

11, 14, 15, 16, 17, 18, 19, 20, 21, 26, 27, 34, 36, 38, 39, 46, 86, 91, 92, 93

(Refer to the SP mode table for details.)

1. Turn on the main switch.
2. Press the Clear Modes key.
3. Press the Clear/Stop key.
4. Press the Enter key.

NOTE: The Call Service indicator and the Copy Counter number "0" start blinking to show that the SP mode has been accessed.

5. Enter the desired SP mode number using the number keys and press the Enter key.

NOTE: 1. An SP mode number will blink in the copy counter. The Copy Counter will stop blinking and stay on when the Enter key is pressed.

2. When the SP mode number is blinking, it can be changed by pressing the Clear/Stop key and entering a new number. The SP mode number can also be changed by using the Zoom keys ("+" & "--").

3. If the Enter key is pressed with an invalid SP mode number, the Max indicator will blink and the Copy Counter number will change to "0". In this case, Enter a valid SP mode number and press the Enter.

6. To leave the SP mode, press the Clear Modes key.

Access Procedure 2: Main switch and number keys

Accessible SP mode numbers:

All SP mode numbers except SP99 (memory all clear).

1. Turn the main switch off.

2. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch.

NOTE: Release the number keys after confirming that the Call Service indicator and the Copy Counter number "0" are blinking.

3. Enter the desired SP mode number using the number keys and press the Enter key.

NOTE: 1. An SP mode number will blink in the Copy Counter. The Copy Counter will stop blinking and stay on when the Enter key is pressed.

2. When the SP mode number is blinking, it can be changed by pressing the Clear/Stop key and entering the new number. The SP mode number can also be changed by using the zoom keys ("+" & "--").

3. If the Enter key is pressed with an invalid SP mode number, the Max indicator will blink and the Copy Counter number will change to "0". Enter a valid SP mode number and press the Enter key.

4. To leave the SP mode, turn off the main switch.

Access Procedure 3: Main switch and mode keys

Accessible SP mode numbers:

All SP mode numbers including the SP99 (memory all clear)

1. Turn the main switch off.
2. While pressing both the Modes Clear and Clear/Stop keys on the operation panel, turn on the main switch.

NOTE: Release the keys after confirming that the Call Service indicator and the Copy Counter number "0" are blinking.

3. After that follow access procedure 2.

2.1.2 Change Adjustment Values or Modes

1. Follow steps 1 to 5 of access procedure 1 or steps 1 to 3 of access procedure 2.
2. The factory-set value/mode or the default setting will be displayed in the three digit indicator.
3. Enter the desired value or mode using the number keys. (SP mode numbers and information are given in the SP Mode table.)
4. To leave the SP mode, press the Clear Modes key (access procedure 1) or turn off the main switch (access procedure 2).

2.1.3 Memory All Clear Procedure (SP99)

CAUTION: Memory all clear mode (SP99) clears all the correction data for process control and software counters, and returns all the modes to the default settings. Normally, this mode should not be performed.

This procedure is required only when the copier malfunctions due to a damaged RAM or when replacing the RAM board for any reason.

1. Access the SP mode through Access Procedure 3.
2. Enter "99" and press the Enter key.
3. Enter "1" and press the Enter key. (Beeper sounds 5 times when memory has been cleared.)

4. Enter the factory-set values in the following SP modes:

40:	Jogger span (Duplex machine only)
41:	Lead edge erase
42:	Registration
43:	Vertical magnification
44:	Horizontal magnification
45:	Duplex magnification (Duplex machine only)
47:	Focus adjustment
50:	Lens error correction
62:	Grid reference voltage
161:	Grid volt/M-CH drum current check (P)
162:	T-CH PWM/drum current check
163:	D-CH (AC) PWM/drum current check
164:	D-CH (DC) PWM/drum current check

NOTE: Open the front cover and remove the cover plate (1 screw) from the front upper cover. There is an SP data table sheet inside the front upper cover which gives the above factory-set values.

- 5. Turn off the main switch.
- 6. Clean the used toner tank because the toner end counter has been cleared.
- 7. Replace the OPC drum with a new one.

NOTE: Since the drum counter for the process control has been cleared, the old drum cannot be used. If the old drum is used after all memory is cleared, a dirty background and/or toner scattering will appear on copies sooner or later because proper VG correction will not be applied to the drum.

- 8. Clean the optics, sensors, and inside of the machine if necessary.
- 9. If the high voltage supply board - CTBG and/or -D has been repalced, do the following:
 - 1) Clean the corona unit casings and replace the corona wires with new ones.
 - 2) Enter to the SP mode by the access procedure 2.
 - 3) Enter the grid voltage correction data in SP62 referring to the label on the high voltage supply board - CTBG.
 - 4) Perform the auto drum current adjustment by SP57.
- 10. Enter the SP mode using access procedure 2.

11. Enable optional equipment operation with SP71 (sorter), SP72 (paper tray unit), and SP84 (edit erase lamp unit) as necessary.
12. Perform the following SP modes:
 - SP66: Drum initialize
 - SP54: Auto Vsg/Vlg adjustment
 - SP48: Exposure lamp voltage adjustment
 - SP56: Auto ADS gain adjustment
13. Check copy quality and the paper path and do the necessary adjustments.

2.2 SERVICE PROGRAM MODE TABLE

- NOTE:**1. A "□" after the mode name means that copies can be made.
For these modes, the copier goes automatically into copy mode when an SP mode number is selected by pressing the "#" key, or when the data number for adjustment is entered by pressing the "#" key after selecting the SP mode number.
To make copies, enter desired copy quantity, select ID level and paper tray, then press the Start key.
If you do not wish to make copies, press the "#" key instead of the Start key.
2. A "•" before the mode number means that the mode can be accessed by users and sales representatives.
3. In the *Function* column, comments (extra information) are in italics.
4. In the *Data* column, the default value is printed in bold letters.

Mode No.		Function	Data
2	Free Run Set	Sets the copier in free run mode. <i>(The copier runs without paper feeding. After SP2 is set, press the start key to start free run operation. Before pressing the start key you can select any other SP mode in which copying is possible [□ mark]. ["#"]→SPNo.→"#"]→Start key].)</i>	
3	Free Run Reset □	Resets the copier from free run mode.	
4	Forced Start □	Copies can be made before being warmed up. <i>(Copy quality and paper transport are not assured.)</i>	
5	Lamp OFF □	Copies are made with exposure lamp OFF. <i>(Black copies are made.)</i>	
6	No Misfeed Detection □	Copies are made without ON check of jam detection.	
7	Call Service Indicator	Indicates the cause of a blinking call service indicator. <i>(Indicates 0, 1, 2, 3, 12, 13, 23, or 123 in the three digit indicator.)</i>	0: Normal 1: PM 2: ID sensor failure 3: Toner overflow.
8	Input Check □	Displays the input data from sensors and switches. <i>(For data, see page 4 - 28.)</i>	
9	Output Check	Electrical components turn on. <i>(For data, see page 4 - 31.)</i>	

Mode No.		Function	Data
10	Color Developer Initialize	Agitates new color developer for about 1 minute. Press the start key to begin operation. <i>(This must be done when new color developer is put in. Beeper sounds 5 times when initialization is completed.)</i>	
•11	All Indicators ON	Turns on all the indicators on the operation panel. <i>(To turn off the indicators, press the "#" key.)</i>	
12	Language	Selects the language displayed in the guidance display. <i>(SP12 applies to type 2 copiers only. For other languages the optional ROM is required.)</i>	0: Japanese 1: English 2: French 3: German 4: Italian 5: Spanish [Other Languages] 0: 1: 2: 3: 4: 5:
13	DLT Double Count	Selects single or double count for the total counter and key counter in 11" x 17" copying. <i>(Double count is not applied for copies from the by-pass feed table. Double count is applied to the user code counter [SP91] and the mechanical counters.)</i>	0: Single 1: Double
•14	Manual Staple Reset	Selects accessible period for manual stapling after completing a copy job in sort mode. <i>(Only when the sorter stapler is installed.)</i>	0: 20 sec. 1: 1 min. 2: None
•15	Auto Reset	Selects auto reset time of 1 or 3 minutes, or cancels this mode.	0: 1 min. 1: 3 min. 2: None
•16	Count Up/Down	Selects count up or count down.	0: Up 1: Down
•17	Auto Cassette Shift	Selects auto cassette shift mode. <i>(Copier automatically shifts to the LCT or paper tray holding the same size paper when paper runs out.)</i>	0: Yes 1: No
•18	Beeper On	Turns beeper on or off.	0: On 1: Off
•19	ID Mode	Specifies whether the copier defaults to ADS or manual ID mode when the main switch is turned on.	0: ADS 1: Manual

	Mode No.	Function	Data
•20	LCT Priority	Sets the feed station priority to LCT or the 1st tray.	0: On 1: Off
•21	APS Priority (Copier)	Specifies whether the copier defaults to APS or manual mode when the main switch is turned on.	0: APS 1: Manual 2: No
22	SADF Auto Reset	Selects auto reset time for SADF mode.	0: 5 sec. 1: 60 sec
23	ADF Free Size	Enables originals of various sizes to be fed from the same width stack. (When this mode is enabled, the job interval for each original increases.)	1: Yes 0: No
24	Overlay Border Erase	Makes a white frame on the border line when using "Black in area" or "Color in area" mode. <i>(Only when the editor is installed.)</i>	0: No 1: Yes
25	Staple Limit	Sets the staple limit of copies in each bin in staple mode. <i>(Only when the sorter stapler is installed.)</i>	0: Yes (30 copies) 1: No (50 copies)
•26	Auto APS Select (ADF)	Selects the priority of APS mode when originals are set on the ADF. <i>(Only when the ADF is installed.)</i>	0: Yes 1: No
•27	Overlay Series Priority	Sets the priority of series copying in overlay mode. <i>(For type 2 copiers only)</i>	0: No 1: Yes
28	Auto Sort Select (ADF)	Sort Mode is automatically selected when more than 1 original is set on the ADF and the entered copy quantity is greater than 1 and less than 21 (11 for the micro sorter). <i>(Sorter and ADF must be installed on the machine. When in duplex 1 [1-sided original mode] or overlay mode, more than 2 originals must be set.)</i>	0: Manual 1: Auto Sort
29	Zero Cross Control	Selects fusing temperature control mode. <i>(After selecting the control mode and turning the main switch off/on, the fusing temperature control mode changes.)</i>	0: Yes (Zero cross) 1: No (Phase)
30	Black Toner Supply Mode	Selects black toner supply mode. <i>(See SP 31/SP32 for toner supply amount.)</i>	0: Detect Mode 1: Fixed Mode
31	Black Toner Supply Ratio (Detect Mode)	Determines how much toner is supplied in detect mode.	0: 15% 1: 7% 2: 30% 3: 60%
32	Black Toner Supply Ratio (Fixed Mode)	Determines how much toner is supplied in fixed mode.	0: 7.0% 1: 3.5% 2: 10.5% 3: 14.0%

Mode No.		Function	Data
33	Black (ID sensor) Pattern Bias	Sets the bias voltage applied to the development roller for the ID sensor pattern. (0: -200 V= Normal 1: -160 V= Lighter 2: -220 V= Darker 3: -240 V= Darkest)	0: N 1: L 2: H 3: HH
•34	ADS Density	Selects the image density level in ADS mode. (Data 1: Increases charge grid voltage [-50 V]. Development bias voltage has standard value. Data 2: Increases development bias voltage [-40 V]. Charge grid voltage has standard value.)	0: N (Normal) 1: H (Darker) 2: L (Lighter)
35	Black ID Detection	Black ID sensor check is performed every 5 copies or 10 copies. (If low image density occurs in the toner near end condition, change the data to "1".)	0: 10 copies 1: 5 copies
•36	Image Shift (Duplex 1)	Selects the margin on the right side of the reverse page in duplex 1 mode. (For type 2 copier only. When duplex 1 [1-sided original mode] is selected, this margin is automatically added.)	0: 5 mm 1: 0 mm 2: 10 mm 3: 15 mm
37	Black Bias	Adjusts black bias voltage if the image density at level 4 cannot be adjusted by (SP48 exposure lamp voltage). This must be done only after replacing the OPC drum. (0: Vo = Normal 1: Vo +40 V = Darkest 2: Vo +20 V = Darker 3: Vo -20 V = Lighter 4: Vo -40 V = Lightest)	0: N 1: HH 2: H 3: L 4: LL
•38	Edge Erase	Selects the width of the edge erase margin. (Only when the editor is installed.)	0: 10 mm 1: 5 mm 2: 15 mm 3: 20 mm
•39	Center Erase	Selects the width of the center erase margin. (Only when the editor is installed.)	0: 20 mm 1: 10 mm 2: 15 mm 3: 25 mm
40	Jogger Span	Adjusts the stop position of the jogger fences. (For type 2 copier only. 0.5 mm per step. [max, -4.0 mm to +3.5 mm].)	0~15 8 = default
41	Lead Edge Erase <input type="checkbox"/>	Adjusts lead edge erase margin. (0.5 mm per step [max -4.0 mm to +3.5 mm].)	0~15 8 = default
42	Registration <input type="checkbox"/>	Adjusts lead edge registration. (0.5 mm per step [max -4.0 mm to +3.5 mm].)	0~15 8 = default

Mode No.		Function	Data
43	Vertical Magnification <input type="checkbox"/>	Adjusts magnification in the paper travel direction. (0.2 % per step. [max. -1.6% to +1.4%.])	0~15 8 = default
44	Horizontal Magnification <input type="checkbox"/>	Adjusts magnification perpendicular to the direction of paper travel. (0.2 % per step. [max. -3.2% to +3.0%.])	0~31 16 = default
45	Duplex Magnification	Adjusts vertical magnification of the first image to equal the second image when using overlay or duplex mode.	0: +0.4% 1: No correction 2: +0.2% 3: +0.6% 4: +0.8% 5: +1.0% 6: +1.2% 7: +1.4% 8: +1.6% 9: +1.8% 10: +2.0%
•46	Highlight Bias (Manual ID Level 7)	Selects the development bias voltage of manual ID level 7. (0: -240 V = Normal 1: -200 V = Darker 2: -280 V = Lighter 3: -320 V = Lightest)	0: N 1: D 2: L 3: LL
47	Focus Adjustment <input type="checkbox"/>	Adjusts the 4th/5th mirror position to correct the fine focus. (0.6 mm per pulse. SP47 must be done after vertical and horizontal magnification adjustments [SP43 and 44].)	0~80 40 = default
48	Lamp Voltage <input type="checkbox"/>	Adjusts the exposure lamp voltage. (50 to 75 V in 0.5 V steps. The lamp voltage must be adjusted only after performing SP 66 when replacing the OPC drum.)	50~75V 63V = default
49	Fusing Temperature	Adjusts fusing temperature. (175 to 190 °C in 1 °C steps.)	175~190 °C 185 ° = default
50	Lens Error Correction <input type="checkbox"/>	Adjusts the lens position to correct magnification in enlarge/reduction mode. (0.1% per step [max. -0.8%, to +0.7%.])	0~15 8 = default
51	Lamp Voltage Check	Displays the exposure lamp voltage. (The exposure lamp, main motor, optics cooling fan fusing exhaust fan, and exhaust blower turn on for 10 seconds when the Enter key is pressed. Press the "•" key to check the target lamp voltage (including corrections). Press the C/S key to turn this mode off. Do not repeat more than 5 times to avoid overheating the optics cavity.)	[V]

	Mode No.	Function	Data
52	Fusing Temperature Check <input type="checkbox"/>	Displays the fusing temperature.	[°C]
53	Drum Temperature Check <input type="checkbox"/>	Displays the temperature around the drum.	[°C]
54	Auto Vsg/Vlg Adjustment <input type="checkbox"/>	Adjusts Vsg of ID sensor and Vlg of V sensor automatically at once. <i>(Adjusted PWM values of ID sensor and V sensor are displayed in the three digit indicator. Beeper sounds 2 times when the adjustments [about 4 sec.] are completed.)</i>	
55	Vsp/Vsg Data <input type="checkbox"/>	Displays the Vsg and Vsp readings. The Vsg reading is displayed while the "0" key is held down. <i>(When making copies, the Vsp and Vsg voltage readings are updated every 10 or 5 copies [ID sensor check timing].)</i>	[V]
56	Auto ADS Gain Adjustment	Adjusts ADS gain data automatically when the start key is pressed. <i>(Close the platen cover to prevent external light from reaching the ADS sensor when performing this adjustment. The gain data is displayed in the three digit counter. Beeper sounds 2 times when the adjustment [about 4 sec.] is completed.)</i>	
57	Auto Drum Current Adjustment	Adjusts the transfer and separation corona currents automatically. Press the start key to perform. <i>(When the high voltage supply board [CTBG] and/or [D] is replaced, perform this mode after setting the data of SP62. When separation corona current adjustment fails, beeper sounds twice and the copier tries the adjustment again. Beeper sounds twice when the adjustment is completed.)</i>	[Display only] 1: Measuring and adjusting the transfer corona current. 2: Measuring and adjusting the separation corona current. 3: Completed
58	Toner End Counter Check	Displays the contents of the black toner end counter. <i>(Toner end condition is not counted if the toner end condition happens within 250 copies after the previous toner end condition.)</i>	

Mode No.		Function	Data
59	Bias Voltage Check <input type="checkbox"/>	Displays bias voltage. Press the Start key to display the bias voltage. Press the C/S key to stop.	[V]
62	Grid Reference Voltage	Sets the grid voltage correction data to correct the output from the high voltage supply board. <i>(A label on the high voltage supply board gives the correct value. When the high voltage supply board [CTBG] is replaced, set the data using SP62 before performing SP57.)</i>	704
65	Black Developer Initialize	Agitates new black developer for about 5 minutes. Press the start key to begin operation. <i>(This mode must be done when new black developer is put in. Beeper sounds 5 times when the initialization is completed.)</i>	
66	Drum Initialize	Used to set new drum condition. <i>(This must be done when a new drum is installed. The OPC counter, VR correction level, and Vref [initial Vlp/Vlg] are cleared. To set, press "1" then the "#" key. Beeper sounds 5 times when the initialization is done.)</i>	0: NO 1: YES
67	Drum Correction Level (VR)	Displays the present VR correction level. <i>(VR level [%]=Vrp/Vrg x 100)</i>	[Display only] 0: 100-84 1: 83-58 2: 57-41 3: 40-28 4: 27-0
68	Lamp Correction Level (VL)	Displays the present Vdat. [Vlp/Vlg x 100=Vdat] The VL level (%) is displayed while the "•" key is held down. <i>(VL level [%]=Vdat/Vref x 100=[(Vlp/Vlg)/ (Initial Vlp/Vlg)] x 100.)</i>	[Display only] VL level 0-100 : +1V 101-150 : 0V 151- : -1V
69	Sensed Drum Correction Level (VR) (Forced VR Detection)	Detects VR correction level regardless of the drum counter. <i>(The detection will be done in the first 5 copy cycles after exiting the SP mode. Beeper sounds 5 times when this mode is accepted.)</i>	
70	Sensed Lamp Correction level (VL) (Forced VL Detection)	Detects VL correction level regardless of the drum counter. <i>(VL pattern detection is done 4 times. Beeper sounds for each detection and Vdat is displayed in the three digit indicator each time. The average of the 4 detections can be monitored by SP68.)</i>	

Mode No.		Function	Data
71	Sorter	Enables sorter operation (0: No sorter 1: N/A 2: Mini sorter (CS2090) 3: N/A 4: Sorter stapler (ST22) 5: Sorter adapter).	0: No 1: MC 2: MIN 3: MID 4: SS 5: ADP
72	Option Paper Tray Unit	Enables paper tray unit operation.	0: No 1: Yes
73	LCT Paper Size	Selects paper size for the LCT. (For type 2 and type 3 only)	0: A4 1: B5 2: LT
74	Color ID Detection	Color ID sensor check is performed every 5 copies or 10 copies. (Normally, "0" should be selected for color toner.)	0: 5 copies 1: 10 copies
75	Red/Blue/Green (ID sensor) Pattern Bias	Selects the bias voltage applied to the development roller for the color ID sensor pattern. (0: Vo = Normal 1: Vo +40V = Lighter 2: Vo -20V = Darker 3: Vo -40V = Darkest)	0: N 1: L 2: H 3: HH
76	Sorter Max	Sets the sort/stack quantity limit. (0: No= No sort/stack limit. 1: Yes=Sort/stack amount is limited, the amount depends on which sorter is installed.)	0: No 1: Yes
77	(ADF) Auto Feed Out (Duplex mode)	Sets the copier to eject the final copy if an odd number of originals are set. (When "Yes", the final sheet is fed out; When "No", the sheet stays in the duplex tray.)	0: Yes 1: No
79	Color Bias	Adjusts color bias voltage if color image density is improper compared with black image density. (0: Vo = Normal 1: Vo +40V = Darkest 2: Vo +20V = Darker 3: Vo -20V =Lighter 4: Vo -40V = Lightest)	0: N 1: HH 2: H 3: L 4: LL
81	Red/Blue/Green Toner Supply Ratio (Detect mode)	Selects color toner supply ratio in detect supply mode. (Each color can have independent toner supply ratio. Selected toner supply ratio corresponds to the color development unit installed in the copier.)	0: 14 % 1: 7 % 2: 21 % 3: 28 %

Mode No.		Function	Data
83	Toner End Counter Clear	Resets the used toner overflow condition and clears the toner end counter (SP58). <i>(To clear, press "1" then the "#" key. SP83 must be used when the used toner tank is cleaned.)</i>	0: No 1: Yes
84	Editing Eraser	Enables edit erase lamp unit operation. <i>(The copier CPU automatically enables edit erase lamp unit when the editor is installed.)</i>	0: No 1: Yes
85	TEL No.	Use to input the telephone number of the service depot. <i>(Pressing "•" key shows "--" in the guidance display.)</i>	
•86	Under Color Density	Adjusts color background density in highlight color mode of editor. <i>(Only effective when the editor is installed. Each color can have an independent under color density. Adjusted under color density corresponds to the color development unit installed in the copier.)</i>	1: Darkest -- 4: Normal -- 7: Lightest
87	PM Interval	Sets the interval of the PM counter.	0: No PM 1: 60 K 2: 80 K 3: 100 K 4: 120 k
88	PM Counter	Displays contents of the PM counter. <i>(When entering this mode by pressing the "#" key, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits. When the PM counter is exceeded, the call service indicator blinks and the key counter indicator lights.)</i>	
89	PM Counter Clear	Resets the PM counter. <i>(Use this mode after performing PM. Beeper sounds 2 times when this function is used.)</i>	
90	User Code Mode	Enables user code mode (Key counter shorting connector must be removed.) <i>(If this mode is set, a user must enter a code to make copies. Resets when auto clear mode functions or when C/S and clear mode keys are pressed together. The user codes are the following 20 numbers: 1101, 1202, 1303, 1404, 1505, 1606, 1707, 1808, 1909, 2010, 2111, 2212, 2313, 2414, 2515, 2616, 2717, 2818, 2919, 3020).</i>	0: No 1: Yes

Mode No.		Function	Data
•91	User code Counter Check	Displays the contents of each user code counter. use the "+" and "--" ("up" and "down") keys to select user code. (The last two digits of the user code are displayed in the copy counter.) <i>(User counters count from 0 to 999999. Press "#" key to display the first three digits in the three digit indicator. Hold down "•" key to display the final three digits.)</i>	
•92	User Code Counter Clear	Resets counters of all the user codes (SP91). <i>(To reset, press "1" then the "#" key).</i>	0: No 1: Yes
•93	Copy Limit	Limits the maximum copy quantity that can be entered.	1 – 999 999 = default
97	SC/Jam Counter Clear	Clears all the service call and jam counters. <i>(To clear, press "1" then the "#" key. Beeper sounds 3 times when this function is used.)</i>	0: No 1: Yes
98	Counter Clear	Clears the following counters: - Operation Time (motor count only) (SP100) - Copy/Original Counters (SP101) - SC Counters (SP120) - Jam Counters (SP130) - PM Counter (SP88) - User Code Counters (SP91) - User Program <i>(To clear, press "1" then the "#" key. Beeper sounds 4 times when this function is used.)</i>	0: No 1: Yes
99	Memory All Clear	Clears all counters and returns all modes to the default setting. <i>(To access this mode turn on the main switch while pressing both the "Clear Modes" and "C/S" keys. Then enter "99" and press the "#" key. To clear, press "1" then the "#" key. Beeper sounds 5 times when this function is used.)</i>	0: No 1: Yes

Mode No.		Function	Data
100	Operation Time	<p>Displays the total (accumulated) time that the main motor has operated. <i>(Time in hours.</i> <i>-Motor Count-</i> <i>Press the "#" key to display the first three digits in the three digit indicator.</i> <i>Hold down the "•" key to display the second three digits.</i> <i>-Drum Count-</i> <i>Hold down the "0" key to display the first three digits in the three digit indicator. Hold down the "0" & "•" keys to display the second three digits.</i> NOTE: Drum counter can be cleared by using SP66.)</p>	
101	Copy/Original Counter	<p>Displays the total number of the following copies or originals. Use the "+" & "--" ("up" & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode.</i> <i>When the desired number displayed in the copy counter is selected by using the "+" & "--" keys, the first three digits are displayed in the three digit indicator.</i> <i>Hold down the "•" key to display the second three digits.</i> <i>Type 2 copier displays all 6 digits in the guidance display.)</i></p>	
101-1	Total Counter	Displays the total number of copies	
101-2	Total Color Counter	Displays the total number of color copies.	
101-3	Red Counter	Displays the total number of red copies.	
101-4	Green Counter	Displays the total number of green copies.	
101-5	Blue Counter	Displays the total number of blue copies.	
101-6	Duplex Counter	Displays the total number of duplex copies made.	
101-7	ADF Counter	Displays the total number of copies made using the ADF.	
101-8	Staple Counter	Displays the total number of sets of stapled copies.	
101-9	Paper Tray Unit Counter	Displays the total number of sheets fed from the paper tray unit.	
101-10	By-pass/LCT Counter	Displays the total number of sheets fed from the by-pass feed table or the LCT.	
101-11	Overlay Counter	Displays the total number of overlay copies made.	
101-12	11" x 17" (DLT) Counter	Displays the total number of 11"x 17" copies.	
101-13	8 1/2" x 14" (LG) Counter	Displays the total number of 8 1/2" x 14" copies.	

	Mode No.	Function	Data
101-14	8 1/2" x 11" (LT) Counter	Displays the total number of 8 1/2" x 11" copies.	
101-15	B5 Counter	Displays the total number of B5 copies.	
101-16	Original Total Counter	Displays the total number of originals copied.	
101-17	Original Counter (ADF)	Displays the total number of originals copied using the ADF.	
101-18	Reduction Counter	Displays the total number of copies made in reduction mode.	
101-19	Enlargement Counter	Displays the total number of copies made in enlargement mode.	
110	Supply Counter	Displays the total number of copies made by using the following supplies. Use the "+" & "-" ("up" & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number displayed in the copy counter is selected by using the "+" & "-" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits. Type 2 copier displays all 6 digits in the guidance display.)</i>	
110-1	Drum Counter	Displays the total number of copies made using the present drum.	
110-2	Black Developer Counter	Displays the total number of copies made using the present black developer.	
110-3	Red Developer Counter	Displays the total number of copies made using the present red developer.	
110-4	Green Developer Counter	Displays the total number of copies made using the present green developer.	
110-5	Blue Developer Counter	Same as above with "Blue".	
120	SC Counter	Displays the total number of the following service calls. Use the "+" & "-" ("up" & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number displayed in the copy counter is selected by using the "+" & "-" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits. Type 2 copier displays all 6 digits in the guidance display.)</i>	
120-1	SC Total Counter	Displays the total number of times the service call indicator has turned on.	

	Mode No.	Function	Data
120-2	SC Optics Counter	Displays the total number of "Optics" service calls.	
120-3	SC Exposure Counter	Displays the total number of "Exposure" service calls.	
120-4	SC Drive Counter	Displays the total number of "Functional Drive" service calls.	
120-5	SC Fuser Counter	Displays the total number of "Fusing" service calls.	
120-6	SC Communication Counter	Displays the total number of "Interface communication" service calls.	
120-7	SC Duplex Counter	Displays the total number of "Duplex" service calls.	
120-8	SC Feed Counter	Displays the total number of "Paper Feed" service calls.	
120-9	SC Sorter Counter	Displays the total number of "Sorter" service calls.	
130	Jam Counter	Displays the total number of paper jams. Use the "+" & "-" ("up & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number displayed in the copy counter is selected by using the "+" & "-" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits. Type 2 copier displays all 6 digits in the guidance display.)</i>	
130-1	Jam Total Counter	Displays the total number of paper jams excluding original jams in the ADF (SP130-14).	
130-2	Jam 1st Feed Counter	Displays the total number of paper jams from the upper paper tray (Type 1 & 3).	
130-3	Jam 2nd Feed Counter	Displays the total number of paper jams from the lower paper tray.	
130-4	Jam 3rd Feed Counter	Displays the total number of paper jams from the upper tray of the paper tray unit.	
130-5	Jam 4th Feed Counter	Displays the total number of paper jams from the middle tray of the paper tray unit.	
130-6	Jam 5th Feed Counter	Displays the total number of paper jams from the lower tray of the paper tray unit.	
130-7	Jam By-pass/LCT Feed Counter	Displays the total number of paper jams from the by-pass feed table or the LCT.	
130-8	Jam Fuser Counter	Displays the total number of paper jams in the fusing unit area.	

	Mode No.	Function	Data
130-9	Jam Inverter Counter	Displays the total number of paper jams in the duplex entrance area.	
130-10	Jam Duplex Stack Counter	Displays the total number of paper jams in the turn gate area during duplex stacking.	
130-11	Jam Duplex Feed Counter	Displays the total number of paper jams from duplex tray.	
130-12	Jam Exit Counter	Displays the total number of paper jams in the copier exit area.	
130-13	Jam Sorter Counter	Displays the total number of paper jams in the sorter.	
130-14	Jam ADF Counter	Displays the total number of original jams in the ADF.	
150	Paper Feed Timing (By-pass/LCT) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the by-pass feed table or the LCT. <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 15: 42 mm 16: 43 mm 17: 44 mm -- 24: 51 mm
151	Paper Feed Timing (1st tray) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the upper paper tray (Type 3 only). <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 9: 36 mm 10: 37 mm 11: 38 mm -- 24: 51 mm
152	Paper Feed Timing (2nd~5th tray) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the lower paper tray or the paper tray unit. <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 6: 33 mm 7: 34 mm 8: 35 mm -- 24: 51 mm
153	Paper Feed Timing (Duplex) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the duplex tray. <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 14: 41 mm 15: 42 mm 16: 43 mm -- 24: 51 mm
154	Single Duplex Reverse Timing <input type="checkbox"/>	Adjusts the reverse timing of paper in the duplex tray in single 2-sided copying. <i>(The smaller the data is, the earlier the reverse timing becomes.)</i>	0: -4 mm -- 3: -1 mm 4: 5: +1 mm -- 8: +4 mm

Mode No.		Function	Data
157	Trail Edge Erase <input type="checkbox"/>	Adjusts the trail edge erase start timing. <i>(When the default value is selected, the trail edge erase starts 2mm after the trail edge of the image.)</i>	0: -6 mm -- 11: -0.5 mm 12: 13: +0.5 mm -- 15: 1.5 mm
160	Grid Volt./M-CH Drum Current Check	Displays the grid bias voltage and the charge corona current for the image area in the three digit indicator. <i>(When entering this mode by pressing the "#" key, grid bias voltage [V] is displayed. Hold down the start key to display the charge corona current [μA]. Grid bias voltage can be changed by using "+" & "--" ["up" & "down"] keys in 5V steps.)</i>	- 745 V
161	Grid Volt./M-CH Drum Current Check (P)	Displays the grid bias voltage and the charge corona current for the ID sensor pattern in the three digit indicator. <i>(When entering this mode by pressing the "#" key, grid bias voltage [V] is displayed. Hold down the start key to display the charge corona current [μA]. Grid bias voltage can be changed by using "+" & "--" ["up" & "down"] keys in 5V steps.)</i>	- 500 V
162	T-CH PWM/Drum Current Check	Displays the transfer corona current in the three digit indicator. <i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the high voltage supply board [T] is displayed. Hold down the start key to display the transfer corona current [μA]. The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys in 1 step.)</i>	
163	D-CH (AC) PWM/Drum Current Check	Displays the separation ac corona current in the three digit indicator. <i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the high voltage supply board [D-ac] is displayed. Hold down the start key to display the separation ac corona current [μA]. The value displayed will change by a large amount after 1.4 seconds. The check value is the value immediately before the change. The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys.)</i>	

Mode No.		Function	Data
164	D-CH (DC) PWM/Drum Current Check.	<p>Displays the separation dc corona current in the three digit indicator.</p> <p><i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the high voltage supply board [D-dc] is displayed.</i></p> <p><i>Hold down the start key to the display separation dc corona current [μA]. The value displayed will change by a large amount after 1.4 seconds. The check value is the value immediately before the change.</i></p> <p><i>The PWM value can be changed by using "+" & "--" ["up" & "down"] keys.)</i></p>	
165	ID-sensor PWM/Output Check	<p>Displays the ID sensor output in the three digit indicator.</p> <p><i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the ID sensor is displayed.</i></p> <p><i>Hold down the start key to display the ID sensor output voltage.</i></p> <p><i>The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys.)</i></p>	
166	V-Sensor PWM/Output Check	<p>Displays the V sensor output in the three digit indicator.</p> <p><i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the V sensor is displayed.</i></p> <p><i>Hold down the start key to display the V sensor output voltage.</i></p> <p><i>The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys.)</i></p>	
167	ADS Gain/Output Check	<p>Displays the ADS sensor output in the three digit counter.</p> <p><i>(When entering this mode by pressing the "#" key, the adjusted gain data for the ADS sensor is displayed.</i></p> <p><i>Hold down the start key to display the ADS sensor output voltage.</i></p> <p><i>Do not hold down the start key too long [about 20 sec], otherwise SC12 comes up.</i></p> <p><i>Gain data can be changed by using the "+" & "--" ["up" & "down"] keys.)</i></p>	

2.3 SP-8 SENSOR/SWITCH/SIGNAL DATA CHECK

- How to check sensor/switch/signal -

- 1. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch in order to access the SP mode.

NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.

- 2. Enter 8 and then press the "#" key.
- 3. Enter the desired input number using the number keys and press the "#" key.

NOTE: The input number entered is displayed in the three digit indicator.

- 4. Enter the number of copies in the copy counter and press the start key if you want to check the input data during the copy cycle.

NOTE: The on/off status can also be checked manually.

- 5. The data ("0" or "1") will be displayed in the three digit indicator.
- 6. To check input data for another sensor, switch, or signal, press the "#" key twice and repeat from step 3.

Input No.	Sensor/Switch/Signal	Data	
		0	1
1	Registration sensor (S11)	Paper not detected	Paper detected
2	Fusing exit sensor(S14)	Paper not detected	Paper detected
4	Upper relay sensor (S10)	Paper not detected	Paper detected
5	Lower relay sensor (S9)	Paper not detected	Paper detected
6	Tray relay sensor - 1 (Paper tray unit) (S9)	Paper not detected	Paper detected
7	Tray relay sensor - 2 (Paper tray unit) (S10)	Paper not detected	Paper detected
8	Tray relay sensor - 3 (Paper tray unit) (S11)	Paper not detected	Paper detected
10	Upper tray set sensor (S2)	Tray not set	Tray set
11	Lower tray set sensor (S3)	Tray not set	Tray set
12	Tray set sensor - 1 (Paper tray unit) (S1)	Tray not set	Tray set
13	Tray set sensor - 2 (Paper tray unit) (S2)	Tray not set	Tray set
14	Tray set sensor - 3 (Paper tray unit) (S3)	Tray not set	Tray set
16	Upper tray upper limit sensor (S7)	Down	Up
17	Lower tray upper limit sensor (S8)	Down	Up

Input No.	Sensor/Switch/Signal	Data	
		0	1
18	Tray upper limit sensor - 1 (Paper tray unit) (S4)	Down	Up
19	Tray upper limit sensor - 2 (Paper tray unit) (S5)	Down	Up
20	Tray upper limit sensor - 3 (Paper tray unit) (S6)	Down	Up
22	Upper tray paper end sensor (S5)	Paper detected	Paper not detected
23	Lower tray paper end sensor (S6)	Paper detected	Paper not detected
24	Paper end sensor - 1 (Paper tray unit) (S7)	Paper detected	Paper not detected
25	Paper end sensor -2 (Paper tray unit)	Paper detected	Paper not detected
26	Paper end sensor - 3 (Paper tray unit) (S8)	Paper detected	Paper not detected
28	LCT paper end sensor (S26)	Paper detected	Paper not detected
29	LCT cover switch (S15)	Cover closed	Cover open
30	LCT down switch (S16)	Off	On
31	LCT lower limit sensor (S27)	Off	On
32	LCT upper limit sensor (S28)	Off	On
34	Sorter bin H.P. sensor	Not at H.P.	At H.P.
35	Sorter bin lift sensor	Off	On
36	Sorter cover switch	Cover open	Cover closed
37	Sorter entrance sensor	Paper not detected	Paper detected
39	By-pass feed table sensor (S1)	Table closed	Table open
40	By-pass feed paper end sensor (S4)	Paper detected	Paper not detected
41	Duplex unit set detection	Off	On
42	Duplex paper end sensor (S24)	Paper not detected	Paper detected
43	Duplex turn gate sensor (S23)	Paper not detected	Paper detected
44	Duplex entrance sensor (S22)	Paper not detected	Paper detected
45	Junction gate sensor (S15)	Paper not detected	Paper detected
47	Platen cover switch (SW11)	Platen cover open	Platen cover closed
48	Scanner H.P. sensor (S16)	Off	On
50	Color development unit switch - 1 (SW9)	Off	On
51	Color development unit switch - 2 (SW9)	Off	On
53	Tray unit door switch (SW13)	Door closed	Door open
54	Exit cover switch (SW10)	Cover open	Cover closed
55	Paper tray unit detection	Tray unit detected	Tray unit not detected
58	Key counter set signal	Not set	Set
59	Total counter micro read switch	Off	On
61	Duplex motor high temperature signal	Off	On
64	Exposure lamp on signal	Off	On

Input No.	Sensor/Switch/Signal	Data	
		0	1
67	Upper tray paper size switches (SW1 - SW4)	Refer to table 1	Refer to table 1
68	Lower tray paper size switches (SW5 - SW8)		
69	Tray paper size switches - 1 (Paper tray unit) (SW1 - SW4)		
70	Tray paper size switches - 2 (Paper tray unit) (SW5 - SW8)		
71	Tray paper size switches - 3 (Paper tray unit) (SW9 - SW12)		
72	Original length&width sensors (S20 & S21)	Refer to tables 2 and 3	Refer to tables 2 and 3

Table 1

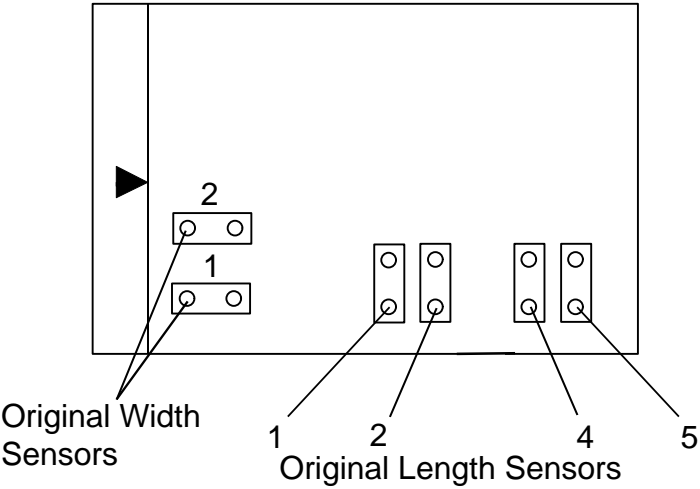
Paper size	Data
A3 / 11" X 17"	1
B4	3
F / 8 1/2" X 14"	2
A4 lengthwise	6
A4 sideways / 8 1/2" X 11" lengthwise	4
B5 lengthwise	12
B5 sideways / 8 1/2" X 11" sideways	8

Table 2

Sensor	Data
Original width 1	1
Original width 2	2
Original length 1	4
Original length 2	8
Original length 3 (A3/A4 type machine only)	10
Original length 4	20
Original length 5	40

Table 3

Original size	Data
11" x 17"	6F
8 1/2" x 11"	E
8 1/2" x 11" sideways	7
8 1/2" x 11" sideways	3
5 1/2" x 8 1/2"	0
8 1/2" x 5 1/2"	2
No original	0
8 1/2" x 14	2E



2.4 SP-9 ELECTRICAL COMPONENT CHECK

- How to turn electrical component on/off -

- 1. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch in order to access the SP mode.

NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.

- 2. Enter 9 using the number keys and then press the "#" key.
- 3. Enter the desired output number using the number keys.

NOTE: The output number entered will blink in the three digit indicator.

- 4. Press the start key to turn on the electrical component.

NOTE: Pressing the start key while holding down the interrupt key turns on the selected electrical component together with the main motor.

- 5. Press the Clear/Stop key to turn off the electrical component.
- 6. To turn on another electrical component, repeat from step 3.

CAUTION: The motors keep turning in this output mode regardless of upper or lower limit sensor signal. Do not keep the electrical component on for a long time to prevent any mechanical or electrical damage.

Output No.	Electrical component
1	Main motor (M1)
2	High voltage supply - Charge corona (PCB7)
3	High voltage supply - Charge corona and grid bias without VR correction (PCB7)
4	High voltage supply - Charge corona and grid bias for ID sensor pattern (PCB7)
5	High voltage supply - Charge corona and grid bias for VR pattern (PCB7)
6	High voltage supply - Charge corona and grid bias for VL pattern (PCB7)
7	High voltage supply - Transfer corona (PCB7)
8	High voltage supply - Separation corona (PCB8)
9	High voltage supply - Development bias (PCB7)
10	ID sensor LED (S12)
11	V sensor LED (S13)
12	Scanner drive motor : Scanner moves forward and returns to the H.P. (M7)
13	Black development unit (Note 1)

Output No.	Electrical component
14	Color development unit (Note 2)
15	Development drive clutch (MC1)
16	Toner supply clutch (MC2)
17	Pre-transfer lamp (L2)
19	Erase lamp unit - All blocks (L5)
20	Erase lamp unit - Designated blocks for ID sensor pattern (L5)
21	Erase lamp unit - Designated blocks for VL pattern (L5)
22	Sorter drive motor
23	Sorter bin drive motor : Up (CAUTION)
24	Sorter bin drive motor : Down (CAUTION)
25	Registration clutch (MC5)
27	By-pass feed clutch (MC3)
28	Feed relay clutch (MC4)
29	Tray unit drive clutch (Paper Tray Unit) (MC4)
30	Upper paper feed clutch (MC6)
31	Lower paper feed clutch (MC7)
32	Paper feed clutch - 1 (Paper tray unit) (MC1)
33	Paper feed clutch - 2 (Paper tray unit) (MC2)
34	Paper feed clutch - 3 (Paper tray unit) (MC3)
35	Upper tray lock solenoid (SOL4)
36	Lower tray lock solenoid (SOL5)
37	Tray lock solenoid - 1 (Paper tray unit) (SOL1)
38	Tray lock solenoid - 2 (Paper tray unit) (SOL2)
39	Tray lock solenoid - 3 (Paper tray unit) (SOL3)
40	Pick-up solenoid (SOL2)
41	Upper tray lift motor : Up (M3)
42	Lower tray lift motor : Up (M4)
43	Tray lift motor - 1 (Paper tray unit) : Up (M1)
44	Tray lift motor - 2 (Paper tray unit) : Up (M2)
45	Tray lift motor - 3 (Paper tray unit) : Up (M3)
46	Upper tray lift motor : Down (M3)
47	Lower tray lift motor : Down (M4)
48	Tray lift motor - 1 (Paper tray unit) : Down (M1)
49	Tray lift motor - 2 (Paper tray unit) : Down (M2)
50	Tray lift motor - 3 (Paper tray unit) : Down (M3)
51	Jogger motor : Set jogger fences at the H.P. (M12)
52	Duplex feed motor : Normal rotation (M11)
53	Duplex feed motor : Reverse rotation (M11)
54	Duplex turn gate solenoid (SOL7)
56	Junction gate solenoid (SOL6)
57	Exhaust blower motor (M2)
58	Fusing exhaust fan motor : High speed (M6)
59	LCT lift motor : Up (M13) (CAUTION)
60	LCT lift motor : Down (M13) (CAUTION)

NOTE 1: When the start key is pressed, the main motor starts turning and the development unit change solenoid is energized. While the "●" key is held down, the development drive and toner supply clutches turn on to supply **black** toner.

NOTE 2: When the start key is pressed, the main motor starts turning and the development unit change solenoid is de-energized to shift the development unit from black to color. While the "●" key is held down, the development drive and toner supply clutches turn on to supply **color** toner.

After performing this output number, perform No.13 (Black development unit) to return the color development unit to its original position.

3. SP MODE PRACTICAL USE TABLE

3.1 REPLACEMENT AND CLEANING

The following table shows the necessary SP modes and the priority order when the listed items are replaced or cleaned:

NOTE:

No.	SP Mode No.	Replaced or Cleaned Item Description	Black Developer	Color Developer	OPC Drum (replace)	ID/V Sensors	ADS Sensor	Exposure Lamp /Optics	Used Toner Tank
1.	65	Black Developer Initialize	O						
2.	10	Color Developer Initialize		O					
3.	66	Drum Initialize			O				
4.	54	Auto Vsg/Vlg Adjustment			O	O			
5.	48	Lamp Voltage			O			(O)	
6.	51	Lamp Voltage Check						O	
7.	70	Forced VL Detection						O	
8.	56	Auto ADS Gain Adjustment			O		O	O	
9.	83	Toner End Counter Clear							O

NOTE: After replacing the exposure lamp or cleaning the optics, check the lamp voltage setting [X] by SP48. Then check the target lamp voltage [Y] decided by the process control through SP51 (press the "." key for reading). Perform the forced VL detection (SP70) [Y- X] times. Check the target lamp voltage [Z] by SP51. Perform the forced VL detection (SP70) again. Confirm that the target lamp voltage [Z] is the same value. If not, repeat the SP70 until the value [Z] does not change.

3.2 MAJOR ADJUSTMENT

The following table shows SP modes for major adjustments in the field:

TONER DENSITY (Detect Mode)

[Black]

Mode No.	Description	Data
SP31	Black Toner Supply Ratio	0:15% 1:7% 2:30% 3:60%
SP33	Black (ID Sensor) Pattern Bias	0:N 1:L 2:H 3:HH
SP35	Black ID Detection	0:10 copies 1:5 copies

[Color]

Mode No.	Description	Data
SP81	Color Toner Supply Ratio	0:14% 1:7% 2:21% 3:28%
SP75	Color (ID Sensor) Pattern Bias	0:N 1:L 2:H 3:HH
SP74	Color ID Detection	0:5 copies 1:10 copies
SP79	Color Bias	0:N 1:HH 2:H 3:L 4:LL

IMAGE DENSITY

Mode No.	Description	Data
SP34	ADS Density	0:N 1:H 2:L
SP48	Lamp Voltage (only when changing the drum)	50 - 75V
SP46	Highlight Bias (ID Level 7)	0:N 1:D 2:L 3:LL
SP79	Color Bias	0:N 1:HH 2:H 3:L 4:LL

OTHER COPY IMAGE

Mode No.	Description	Data
SP41	Lead Edge Erase	0 - 15 (0.5mm/step)
SP42	Registration	0 - 15 (0.5mm/step)
SP43	Vertical Magnification	0 - 15 (0.2%/step)
SP44	Horizontal Magnification	0 -31 (0.2%/step)
SP45	Duplex Magnification	0:0.4% 1:0% 2:0.2% 3:0.6% 4:0.8% 5:1.0% ...
SP47	Focus Adjustment	0 - 80

3.3 CHECKING

The following table shows SP modes for major items to be checked in the field:

Mode No.	Description
SP2	Free Run Set
SP3	Free Run Reset
SP8-1 to -72	Sensor/Switch/Signal Data Check
SP9-1 to -60	Electrical Component Check
SP51	Lamp Voltage Check
SP52	Fusing Temperature Check
SP55	Vsg/Vsp Data
SP58	Toner End Counter Check
SP100	Operation Time (Motor/Drum Count)
SP101-1	Total Counter
SP101-2	Total Color Counter
SP101-6	Total Duplex Counter
SP101-9	Paper Tray Unit Counter
SP101-10	By-pass/LCT Counter
SP101-17	Original Counter (ADF)
SP110-1	Drum Counter
SP110-2	Black Developer Counter
SP120-1 to -9	SC Counter
SP130-1 to -14	Jam Counter
SP165	ID-Sensor PWM/Output Check
SP166	V-Sensor PWM/Output Check
SP167	ADS Gain/Output Check

3.4 OPTIONAL EQUIPMENT INSTALLATION

The following table shows SP modes for enabling the optional equipment’s function:

Mode No.	Description	Data
SP71	Sorter	0:No 1:MC 2:MIN 3:MID 4:SS 5:ADP
SP72	Paper Tray Unit	0:No 1:Yes
SP84	Editing Eraser	0:No 1:Yes

4. TEST POINTS

4.1 MAIN CONTROL BOARD

Number	Label	Function
TP101	(LAMP)	Exposure lamp feedback voltage
TP102	(DRAMTH)	Drum thermistor reference voltage (25°C: 2V, 35°C: 1.6V, Open: 5V, Short: 0V)
TP103	(SCN-TNT)	Scanner free run with exposure lamp off by shorting TP103 and TP104.
TP104	(C GND)	Ground
TP105	(VCC)	+5V
TP106	(DRUM AC)	Feedback voltage for drum current ac component
TP107	(DRUM DC)	Feedback voltage for drum current dc component
TP108	(P-SEN)	ID sensor output
TP109	(VL)	V sensor output
TP110	(ADS)	ADS sensor output
TP111	(I-DRUM)	Feedback voltage for drum current
TP112	(DCPOL)	Reference voltage for drum current dc component's polarity
TP113	(FUSER)	Fusing thermistor reference voltage (Room temp: 4.8V, 185°C: 0.9V, Open: 5V, Short: 0V)

5. PREVENTIVE MAINTENANCE SCHEDULE

5.1 PM TABLE

Lub=Lubricate Repl=Replace Cln=Clean Ck=Check

	EM	80K	160K	240K	NOTES
A. OPTICS					
1. Mirrors, Lens, Reflectors ...	Cln	Cln	Cln	Cln	Clean with Silicone cloth, cotton pad with water, or Blower Brush. Note: clean 6th mirror with Blower Brush.
2. Exposure Glass.....	Cln	Cln	Cln	Cln	Alcohol, glass cleaner or water.
3. Platen Cover Sheet.....	Cln	Repl	Repl	Repl	Alcohol or Water (replace if necessary),
4. Scanner Guide Rail		Cln	Cln	Cln	Dry Cloth
5. Maginification Guide Rail ..		Cln	Cln	Cln	Dry Cloth
6. ADS, Original Size Sensors	Cln	Cln	Cln	Cln	Blower Brush
7. Optics Fan Filter.....		Cln	Cln	Cln	Replace if necessary
8. Optics Ozone Filter		Repl	Repl	Repl	
B. PAPER FEED					
1. Paper Feed Rollers (LCT/By-Pass feed)	Cln	Repl	Repl	Repl	Water. replace pick-up, feed, and Separation rollers as a set.
2. Paper Feed Roller (Paper Trays)	Cln	Repl	Repl	Repl	Water, replace with friction pad ass'y as a set.
3. Friction Pad Ass'y	Cln	Repl/ Lub	Repl/ Lub	Repl/ Lub	Water/Albania 2 Lithium grease. (P/N Procure Locally) NOTE: 1
4. Separation Roller Slip Clutch (LCT, By-pass feed).....		Lub	Lub	Lub	Mobil Temp. 78 (P/N 54479078). NOTE: 1
5. Paper Feed Guide Plates..	Cln	Cln	Cln	Cln	Alcohol.
6. Registration Roller	Cln	Cln	Cln	Cln	Water.
7. Relay Rollers.....	Cln	Cln	Cln	Cln	Water.
8. Paper trays/LCT Bottom Plate Pads.....	Cln	Repl	Repl	Repl	Water.
9. By-pass Feed Bottom Plate Pad.....	Cln	Repl	Repl	Repl	Water.
10. Registration Sensor		Cln	Cln	Cln	Blower Brush.
C. AROUND THE DRUM					
1. Bin Guide/Wheel	Cln	Repl	Repl	Repl	Drycloth or water.
2. Round Belt		Repl	Repl	Repl	
3. Gulde Plate		Cln	Repl	Cln	Blower Brush.
4. End Blocks and Casings ...	Cln	Cln	Cln	Cln	Water or Alcohol
5. Transfer Guide Plate	Cln	Cln	Cln	Cln	Dry cloth
6. Pre-Transfer Lamp Filter ...	Cln	Cln	Cln	Cln	Dry Cloth and lower Brush. Discharge any static with a clean finger before Installation.
7. Quenching Lamp Filter.....	Cln	Cln	Cln	Cln	Dry Cloth and lower Brush. Discharge any static with a clean finger before Installation
8. Toner Shield Glass and Filter	Cln	Cln	Cln	Cln	Dry Cloth and lower Brush. Discharge any static with a clean finger before Installation
9. ID Sensor	Cln	Cln	Cln	Cln	Blower Brush.
10. V Sensor	Cln	Cln	Cln	Cln	Blower Brush.
					Continued . . .

Lub=Lubrlcate Repl=Replace Cln=Clean Ck=Check

	EM	80K	160K	240K	NOTES
11. Erase Lamp Unit	Cln	Cln	Cln	Cln	Dry cloth and Blower Brush. Discharge any static with a clean finger before installation.
12. Pick-off Pawls	Cln	Cln	Cln	Cln	Replace if necessary.
D. CLEANING UNIT					
1. Cleaning Blade.....	Cln	Cln	Cln	Cln	
2. Cleaning Seal.....		Cln	Cln	Cln	Replace if necessary
3. Cleaning Brush		Repl	Repl	Repl	Alcohol or Water (replace if necessary),
4. Used Toner Tank	Cln	Cln	Cln	Cln	Empty used toner. Perform SP83 (Toner End Counter Clear).
E. DEVELOPMENT UNIT					
1. Developer		Repl	Repl	Repl	Perform SP65 (Black Developer Initialization).
2. Development Unit Gears...				Cln/ Lub	Grease G-40M(P/N A0089502). NOTE: 2
3. Upper Seal		Cln	Cln	Cln	
4. Side Seals.....		Cln	Cln	Cln	
F. FUSING UNIT					
1. Hot Roller		Cln	Repl Lub	Cln	Replace if necessary. Grease Barrieta L55/2. (P/N A0289300). note: 3
2. Pressure Roller		Cln	Repl Lub	Cln	Replace if necessary, Grease Barrieta L55/2. NOTE: 3
3. Stripper Pawls.....	Cln	Repl	Repl	Repl	Replace.
4. Fusing Entrance and Exit Guides.....		Cln	Cln	Cln	Suitable solvent.
5. Fusing Thermistor		Ck	Ck	Ck	Suitable solvent, clean if necessary.
6. Fusing Drive Gears			Repl/ Lub		Grease G501 (P/N 52039501) NOTE: 3
G. DUPLEX (FT5733 only)					
1. Feed Roller		Repl	Repl	Repl	Replace as necessary (replace as a set with feed roller).
2. Bottom Plate Pad		Repl	Repl	Repl	Replace if necessary
3. Bottom Plate Spring Clutch		Lub	Lub	Lub	Mobil Temp. 78 NOTE: 4
H. OTHERS					
1. Ozone Filters (paper)		Repl	Repl	Repl	
2. Ozone Filters (Ceramic)					Replace at 400K
3. Drive Belt		Ck	Ck	Ck	Replace if necessary
4. Bushings			Lub		Spindle oil. NOTE: 5
5. Exit Sensor.....		Cln	Cln	Cln	Blower Bursh.
6. Development Unit Shift Spring Clutch				Lub	Mobil Temp. 78 NOTE: 2
7. Development Drive Gear ..				Repl/ Lub	Grease G-40M. NOTE: 2
Continued . . .					

Lub=Lubricate Repl=Replace Cln=Clean Ck=Check

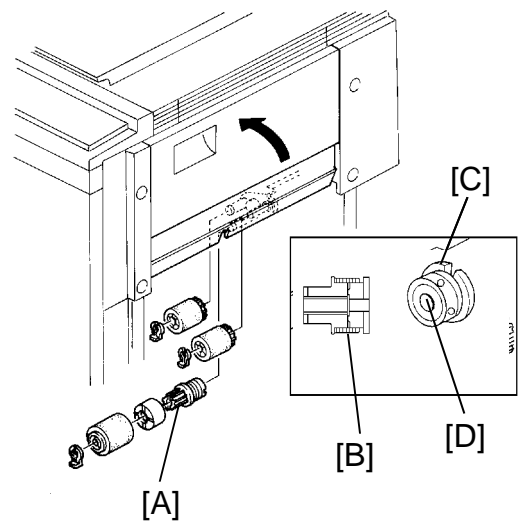
	EM	80K	160K	240K	NOTES
I. PAPER TRAY UNIT (PS250)					
1. Paper Feed Roller _____	C	Repl	Repl	Repl	Water, Replace w/ friction Pad Ass'y as a set.
2. Friction Pad Ass'y _____	C	Repl/ Lub	Repl/ Lub	Repl/ Lub	Water/Albania2 Grease. NOTE: 1
3. Paper Tray Bottom Plate Pad		Repl	Repl	Repl	Water.
J. DOCUMENTFEEDER (DF56)					
1. Transport Belt _____	Cln	Repl	Repl	Repl	Belt cleaner, replace If necessary.
2. Pick-up Roller. _____	Cln	Cln	Cln	Cln	Water, Replace If necessary.
3. Feed Roller _____	Cln	Repl	Repl	Repl	Water, Replace If necessary.
4. Friction Belt. _____	Cln	Repl	Repl	Repl	Water, Replace If necessary.
5. Registration, Original Width, & Feed-out Sensors _____		Cln	Cln	Cln	Blower Brush.
K. SORTER (CS2090)					
1. Bin Guide/Wheel _____		Lub	Lub	Lub	Grease G501 if necessary
2. Round Belt _____		Cln	Cln	Cln	Alcohol.
3. Guide Plate _____		Cln	Cln	Cln	Dry Cloth.
L. SORTER STAPLER (ST-22)					
1. Transport, Distribution & Exit Rollers _____	Cln				Water, Damp Cloth.
2. Bins _____	Cln				Water, Damp Cloth.
3. Bin, Jam Paper Sensors _____	Cln				Blower Brush.
4. Bushings _____	Lub				Launa oil (P/N54439103) or equivalent. If bushing generates noise.
5. Gears _____	Lub				Grease-501, If gears generate noise.
6. Worm Gears _____	Lub				Grease Mobil Temp. 78, if worm gears generate noise.
7. Diagonal Transport Rollers					Clean every 320K with water, & damp cloth.
8. Diagonal Transport Stopper.					Clean every 320K with Alcohol.
9. Staple Unit Guide Rod, Pad	Lub				Launa oil or equivalent.
M. SORTER STAPLER (ST24)					
1. Bins _____		Cln	Cln	Cln	Water
2. Rollers _____		Cln	Cln	Cln	Water
3. Bushings _____		Lub	Lub	Lub	Launa oil or equivalent.
4. Gears _____		Lub	Lub	Lub	Grease - 501
5. Exit Rollers & Bushing _____		Lub	Lub	Lub	Launa oil or equivalent.

The location of the parts which should be lubricated at PM, are shown in the following figures:

Note 1:Paper feed Section

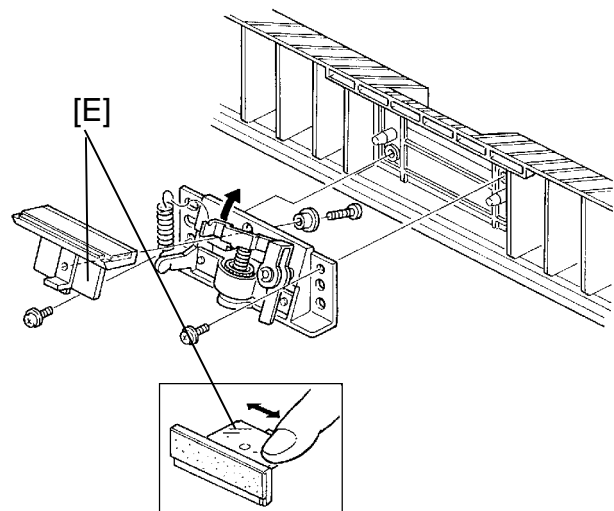
(1)Separation Roller Slip Clutch

Clean the slip clutch [A].
Then, lubricate the inner surface of the spring [B] and the three grease holes [C] of the hub [D] with Mobil Temp. 78 every 80K.



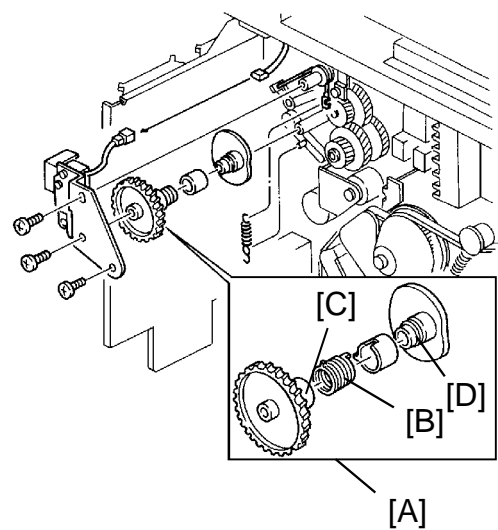
(2)Friction Pad Assembly

Replace the friction pad assembly [E] every 80k.
Then, lubricate the pad holder with ALBANIA 2 grease as shown.

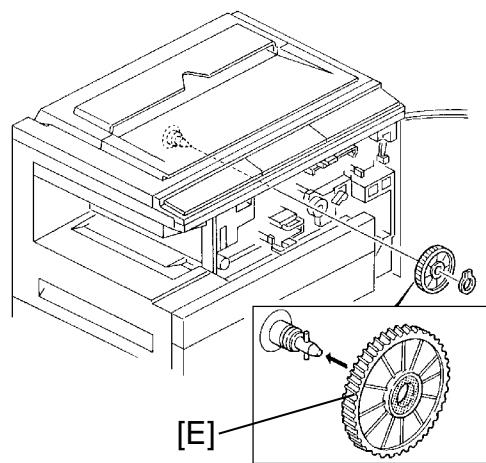


Note 2:Development Section

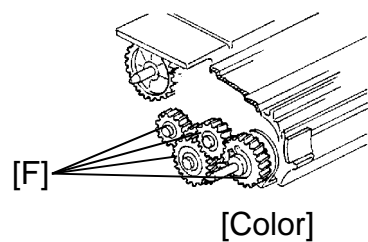
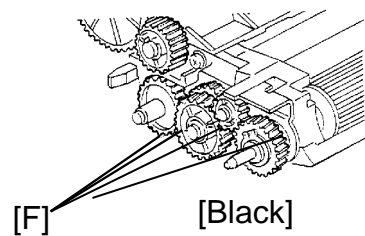
- (1)Development Unit Change Clutch Clean the shift clutch assembly [A].
Then, lubricate the clutch spring [B] with Mobil Temp. 78 every 240K.



- (2)Development Drive Gear
Replace the development drive gear [E] every 240K.
Then, lubricate it with Silicone Grease G-40M.



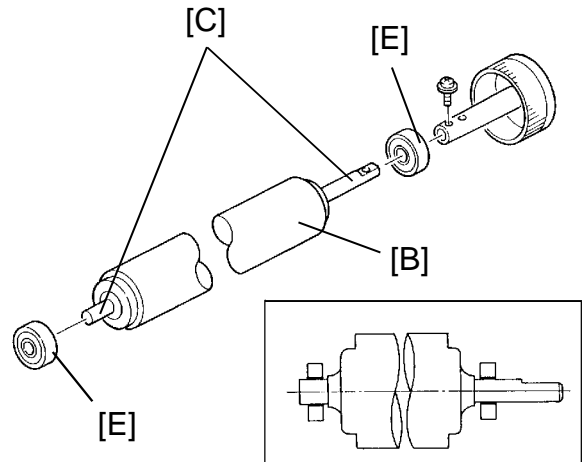
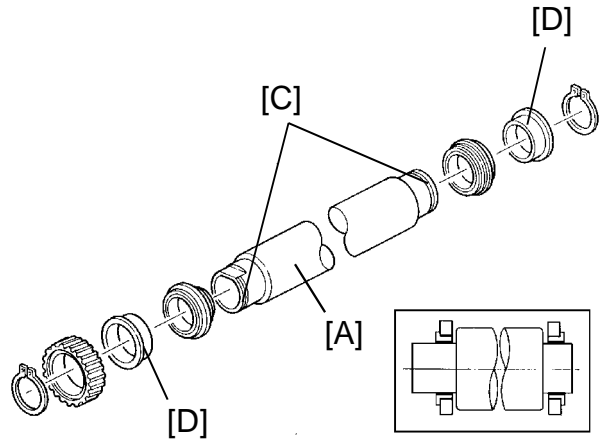
- (3)Development Unit Gears
Clean the gears [F] located on the rear side of development unit.
Then, lubricate them with Silicone Grease G-40M every 240K.



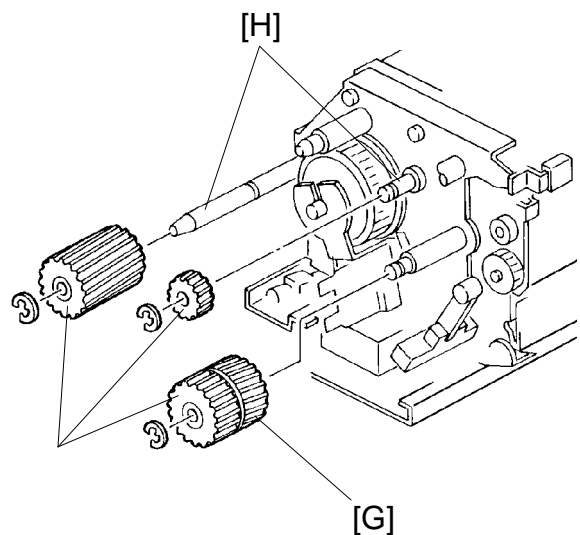
Note 3:Fusing Section**(1)Hot and Pressure Rollers**

Replace the hot [A] and pressure [B] rollers every 160K if necessary.

Then, lubricate the roller shaft [C], bushings [D] and bearings [E] with BARRIER TA L55/2 grease.

**(2)Fusing Drive Gears**

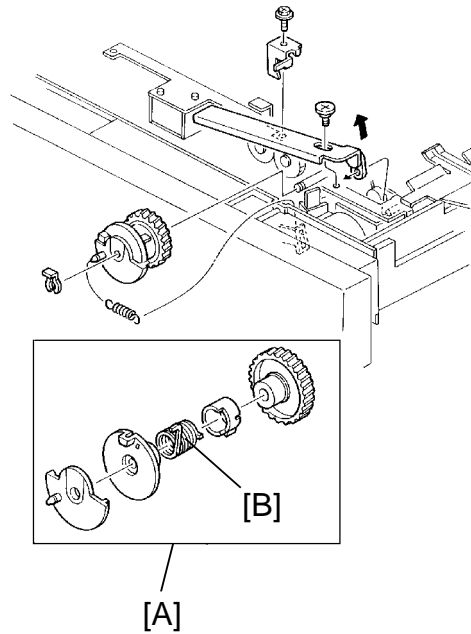
Replace the fusing drive gears [F] every 160K. Then, lubricate the gears [F, G] and their shafts [H] with Grease G501.



Note 4: Duplex Section

(1) Clutch Spring

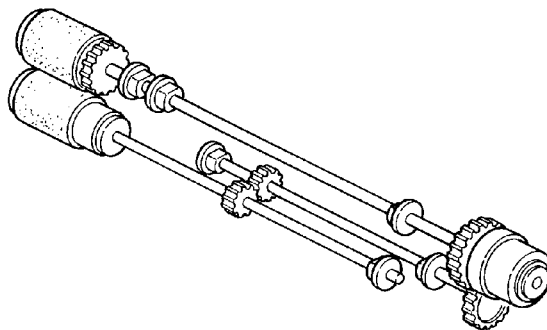
Clean the clutch assembly [A].
Then, lubricate the clutch
spring with Mobil Temp. 78
every 80K.



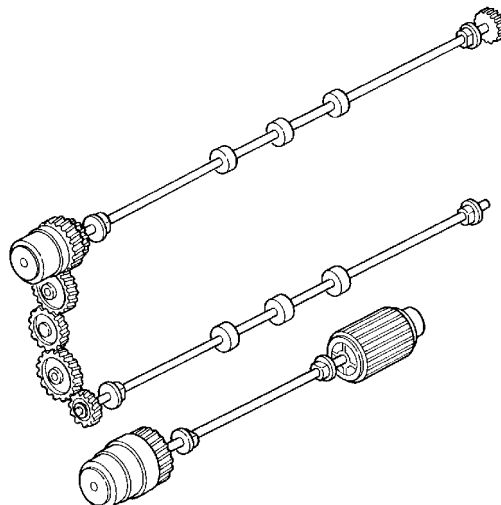
Note 5: Bushings

Lubricate the following
bushings with machine oil
every 160K.

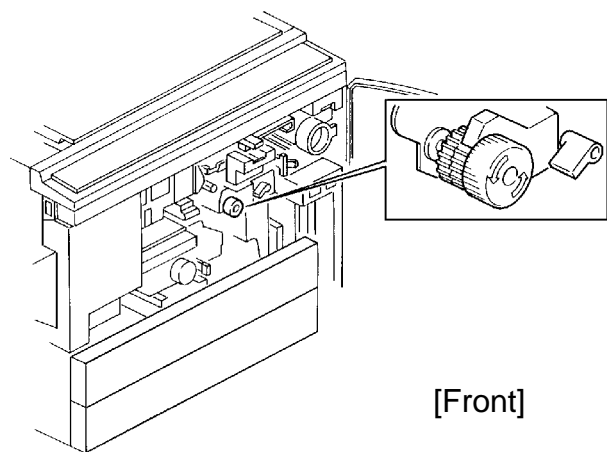
**(1) Paper Feed (LCT/By-pass
Feed)**



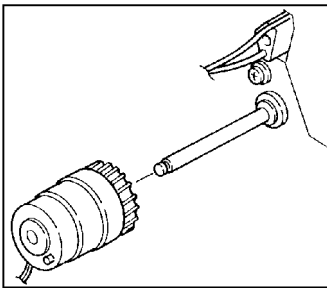
**(2) Relay Rollers and Tray Paper
Feed**



(3)Registration Roller

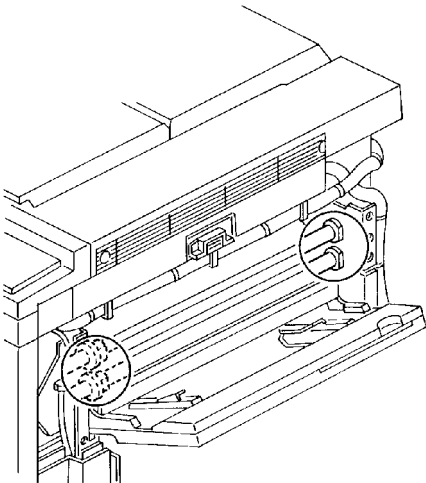


[Front]

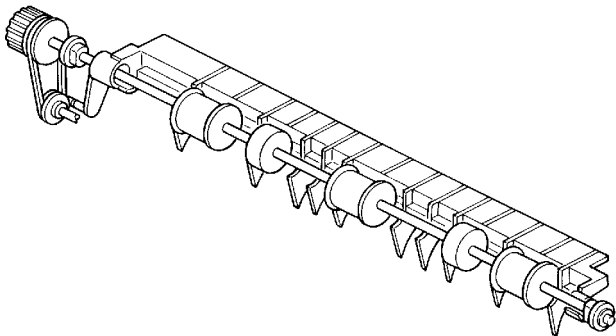


[Rear]

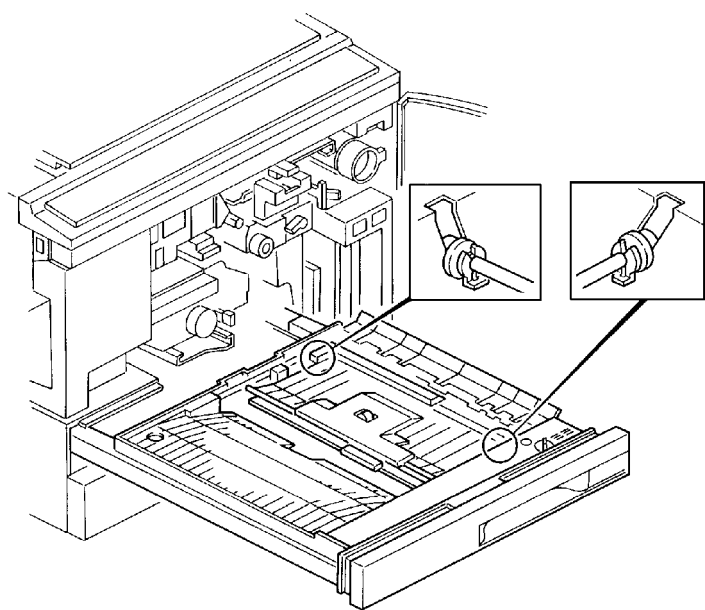
(4)Development Shift Section



(5)Exit Roller



(6)Duplex Tray



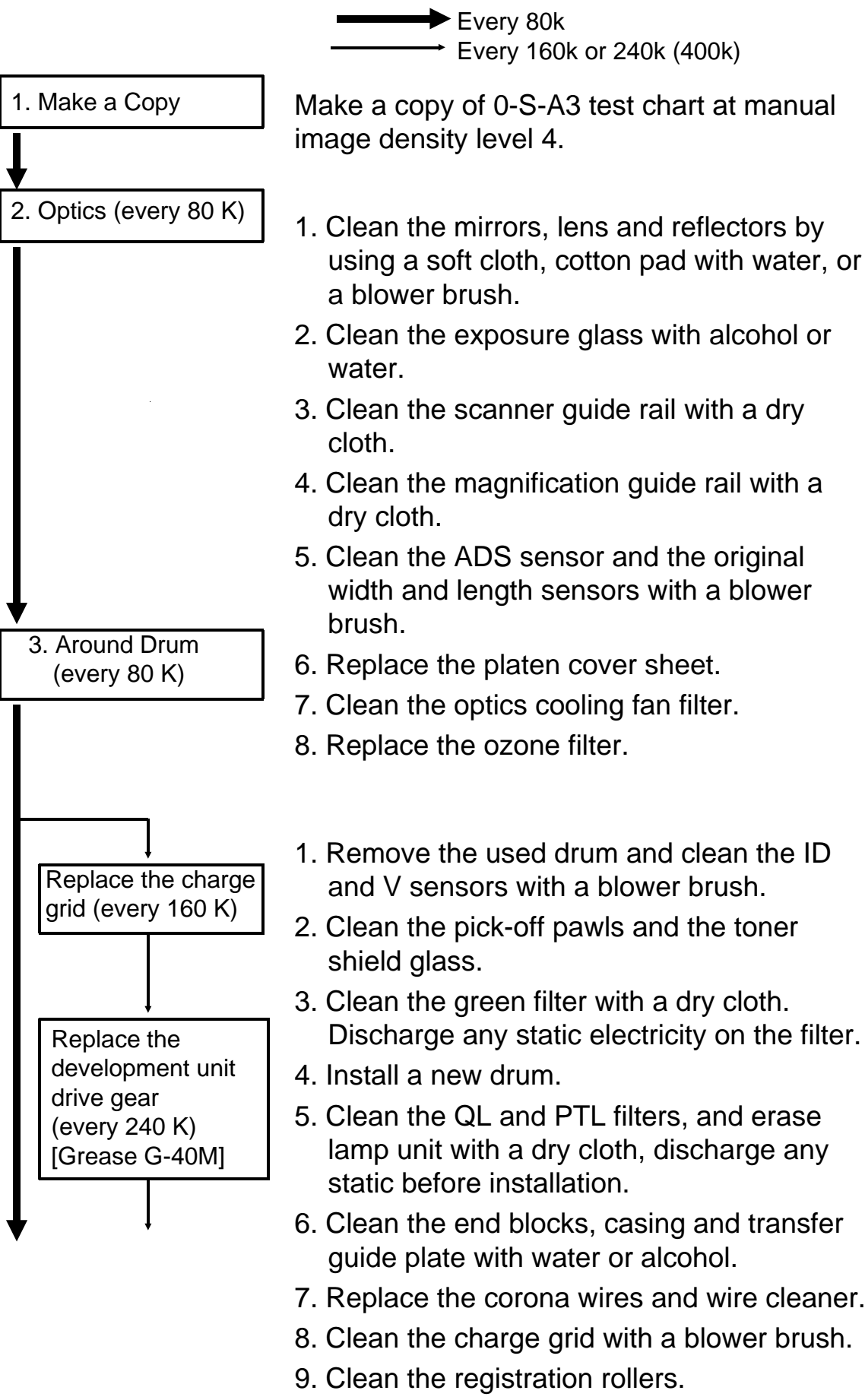
5.2 EXPLANATION OF REGULAR PM

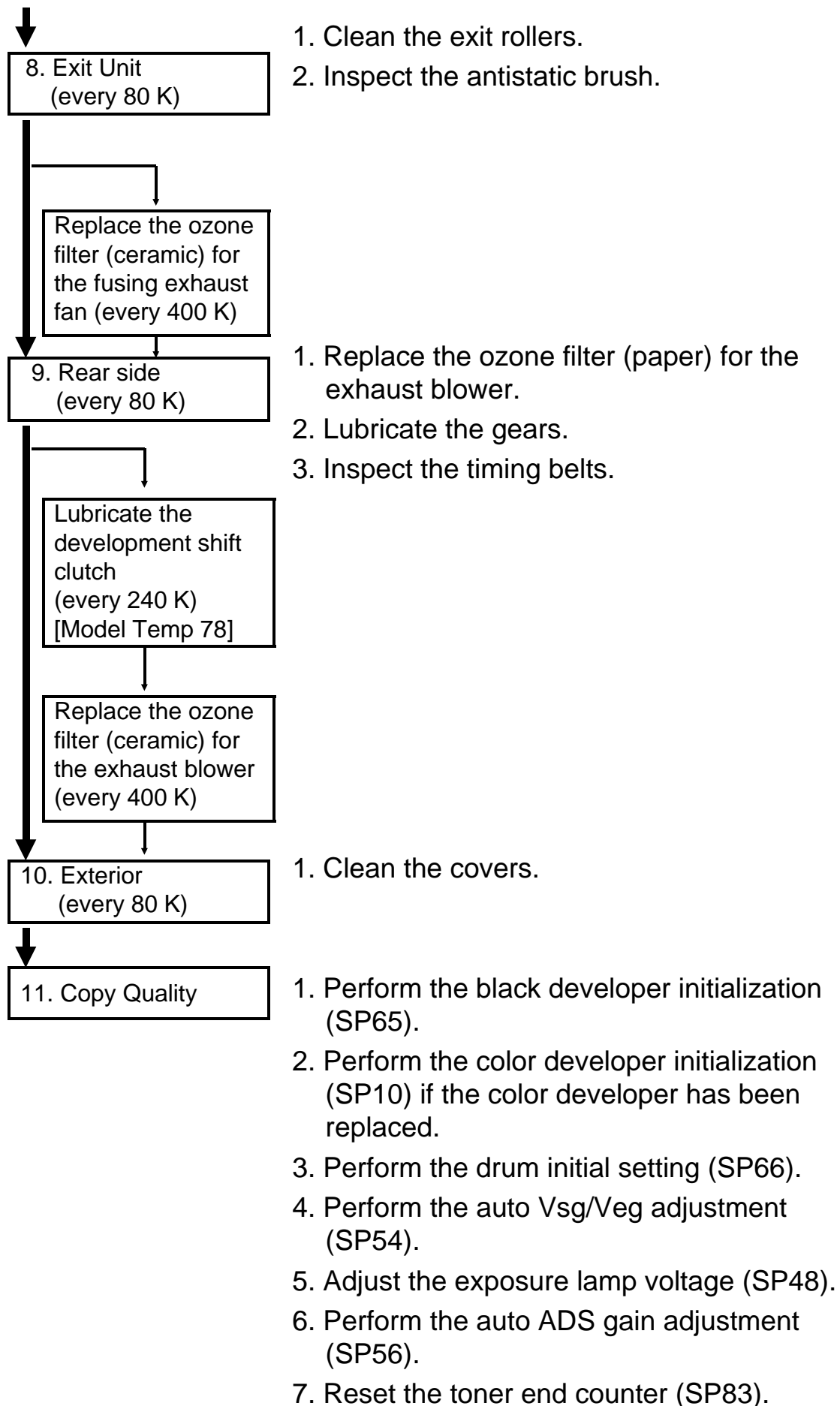
Item		Explanation
Optics Unit	Mirrors, Lens, Reflector, Exposure Glass, Platen Cover	Stains on any part of the optics unit result in black lines or areas of decreased sharpness on the copy image. Periodic cleaning is required. The exposure glass and the platen cover must also be cleaned. If stains on the platen cover cannot be removed, it must be replaced.
	Exposure Lamp	Deterioration of the exposure lamp affects the copy image. Check the lamp at regular intervals and replace if discolored.
	Ozone Filter	When an ozone filter deteriorates, ozone produced in the copier will not be absorbed causing headaches irritations, or other discomforts. Replace at regular intervals.
Paper Feed, Registration	Paper Feed Roller, Pick-up Roller, Separation Roller Friction Pad Ass'y Bottom Plate Pad	This machine uses paper trays and LCT for paper feeding. If paper dust adheres to the paper feed roller, friction pad ass'y and bottom plate pads are worn out, paper may not feed correctly and/or skewing may result. Cleaning or replacement is required at regular intervals.
	Registration Roller	A dirty registration roller can cause paper to register incorrectly, skew, or jam. Cleaning is required at regular intervals.
Transport	Transfer Guide Plate	If the transfer guide plate is dirty, the back side of the copy may become dirty. Clean the plate at regular intervals.

Item		Explanation
Around Drum	Drum	The drum exceeding its lifetime may cause black lines in half tone area, dirty background, and overtoning. Replace the drum at regular intervals.
	Charge Wires Charge Grid	Dirty charge wires may cause uneven image density. They should be cleaned or replaced at regular intervals.
	End Blocks	Toner tends to accumulate on the corona end blocks, and this can result in poor copy quality or even a high voltage leak. Clean end blocks at regular intervals.
	QL	If toner accumulates on the QL filter, a dirty background or a repeating negative image may result. Clean the QL filter at regular intervals.
	PTL	If paper dust or toner accumulates on the PTL filter, its efficiency may be reduced. This can cause toner to be reattracted to the drum during transfer, reducing image density. Clean the PTL filter at regular intervals.
	ID Sensor	If paper dust or toner accumulates on the ID sensor, the toner density cannot be controlled correctly. This results in light copy or overtoning. Clean this sensor at regular intervals.
	V Sensor	If paper dust or toner accumulates on the V sensor, the image density cannot be controlled correctly. This results in light or dark copies. Clean this sensor at regular intervals.
Around Drum	Erase Lamp	If toner accumulates on the erase lamp, a dirty background may occur in the erased area that becomes progressively worse in long copy runs. Also this affects sensor pattern detection, causing incorrect toner density and exposure lamp control. Clean this lamp at regular intervals.
Cleaning Unit	Cleaning Blade	A dirty or worn out cleaning blade will cause black lines on copies and/or scratches on the drum. The blade must be replaced or cleaned at regular intervals.
	Cleaning Brush	A worn out cleaning brush will not clean the drum surface effectively, resulting in a dirty background and damage to the cleaning blade. Replace at regular intervals.
	Used Toner Tank	The used toner tank becomes full before the used toner overflow detection if the tank is not emptied when resetting the toner end counter (SP83). This may cause poor cleaning, damage to the cleaning empty the tank at regular intervals unit and the drum, and/or toner scattering inside the machine.

Item		Explanation
Fusing Unit	Thermistor	If toner accumulates on the thermistor, fusing temperature control may not be accurate. Inspect the thermistor at regular intervals.
	Stripper Pawls	Toner or dust adhering to the stripper pawls can cause a paper jam. Clean or replace the pawls at regular intervals.
	Fusing Entrance and Exit Guides	Toner piling up on the guide plate will cause a dirty background on the copy or paper jam. Clean the guide plate at regular intervals.
Duplex Unit	Feed Roller and Bottom Plate Pad	If paper dust adheres to the feed roller and bottom plate pad, paper may not feed correctly and/or skewing may result. Cleaning or replacement is required at regular intervals.
Others	Ozone Filters	When an ozone filter deteriorates, ozone produced in the copier will not be absorbed causing headaches irritations, or other discomforts. Replace at regular intervals.
Paper Tray Unit	Paper Feed Roller, Friction Pad Ass'y Bottom Plate Pads	This machine uses paper trays for paper feeding. If paper powder or dust adheres to the paper feed roller, friction pad ass'y and bottom plate pads are worn out, paper may not feed correctly and/or skewing may result. Cleaning or replacement is required at regular intervals.
ARDF	Transport Belt	A dirty transport belt can leave stains on copies. Clean or replace the belt at regular intervals.
	Pick-up Roller, Separation Roller, Separation Belt	When dirty, these rollers and this belt can leave stains on the copy paper. Also, original misfeeds or multifeeds may occur. Clean or replace these parts at regular intervals.
Sorter	Bin Drive Wheel, Bin Guide	Dust adhering to the bin drive wheel or bin guide may interfere with bin movement and result in uneven bin positioning. Clean and lubricate if necessary.
Sorter Stapler	Diagonal Transport Roller Diagonal Transport Stopper	If paper dust adheres to the diagonal transport rollers and stopper, paper may not transport correctly and/or paper jam may result. Cleaning or replacement is required at regular intervals.

5.3 REGULAR PM PROCEDURE





SECTION 5

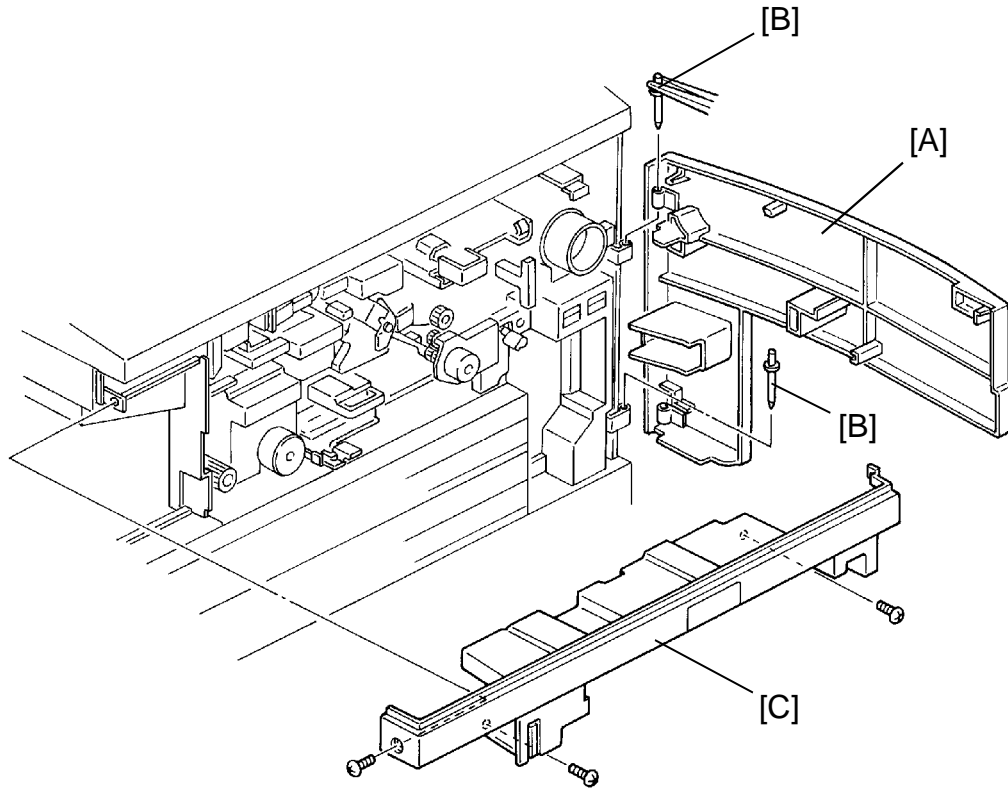
REPLACEMENT

AND ADJUSTMENT

1. EXTERIOR AND INNER COVERS

1.1 EXTERIOR COVER REMOVAL

1.1.1 Front Door

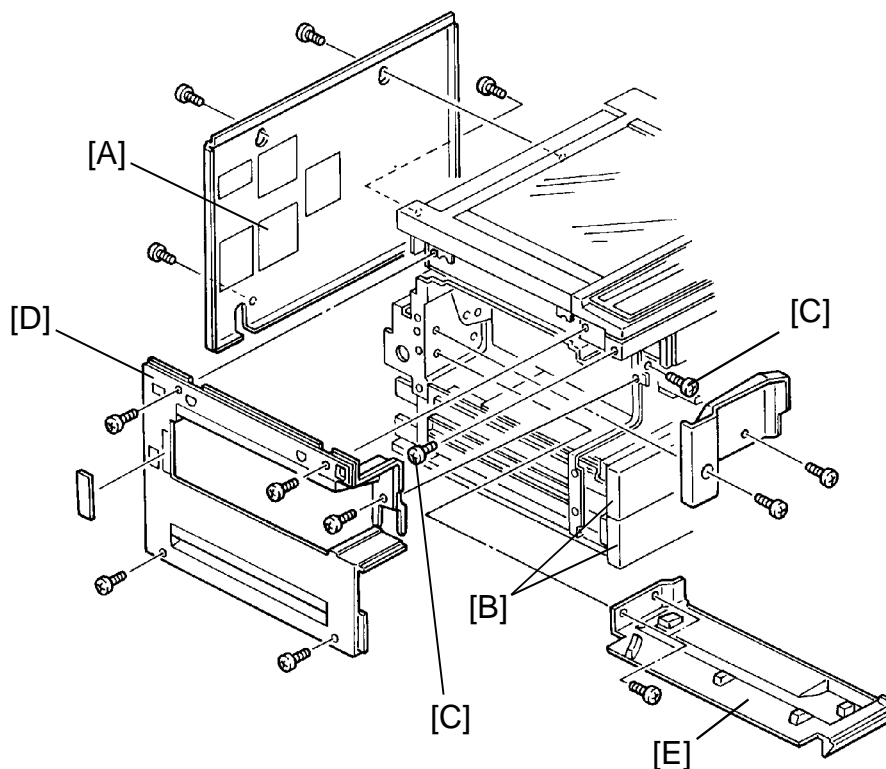


1. Open the front door [A].
2. Pull out the 2 pins [B].

1.1.2 Front Upper Cover

1. Open the front door and remove.
2. Remove the front upper cover [C] (3 screws).

1.1.3 Rear Cover



1. Remove the rear cover [A] (remove 2 screws and loosen 2 screws).

1.1.4 Left Cover

1. Open the front door and pull out the upper and lower paper trays (or the duplex tray) [B].
2. Remove the rear cover.
3. Remove the left and front side screws [C] of the front upper cover (1 screw).
4. Remove the left cover [D] (5 screws).

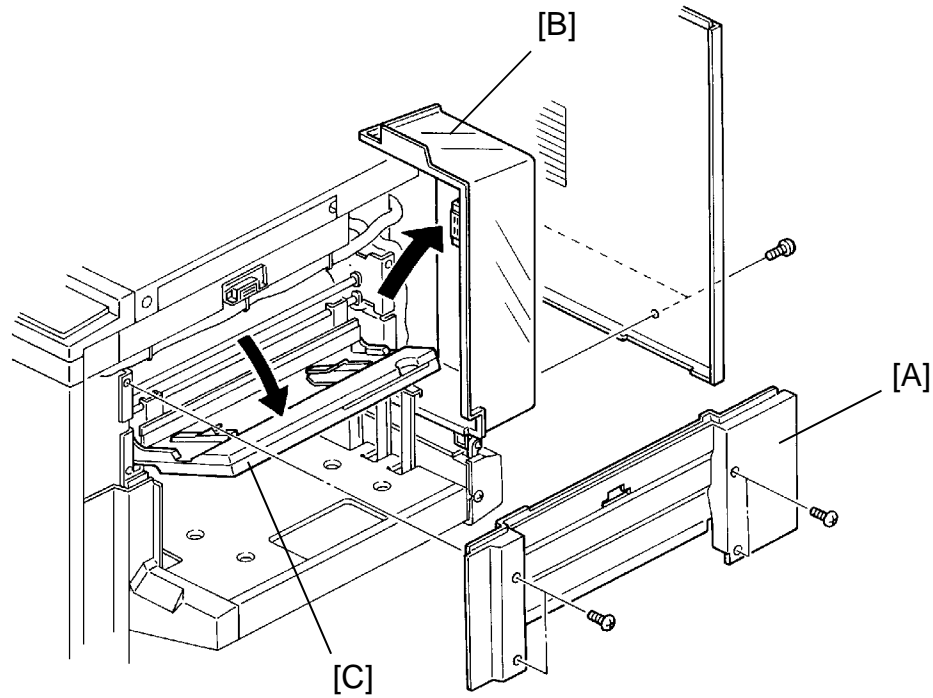
NOTE: Remove the sorter, sorter stapler and sorter adapter if they are installed.

1.1.5 Left Bottom Cover

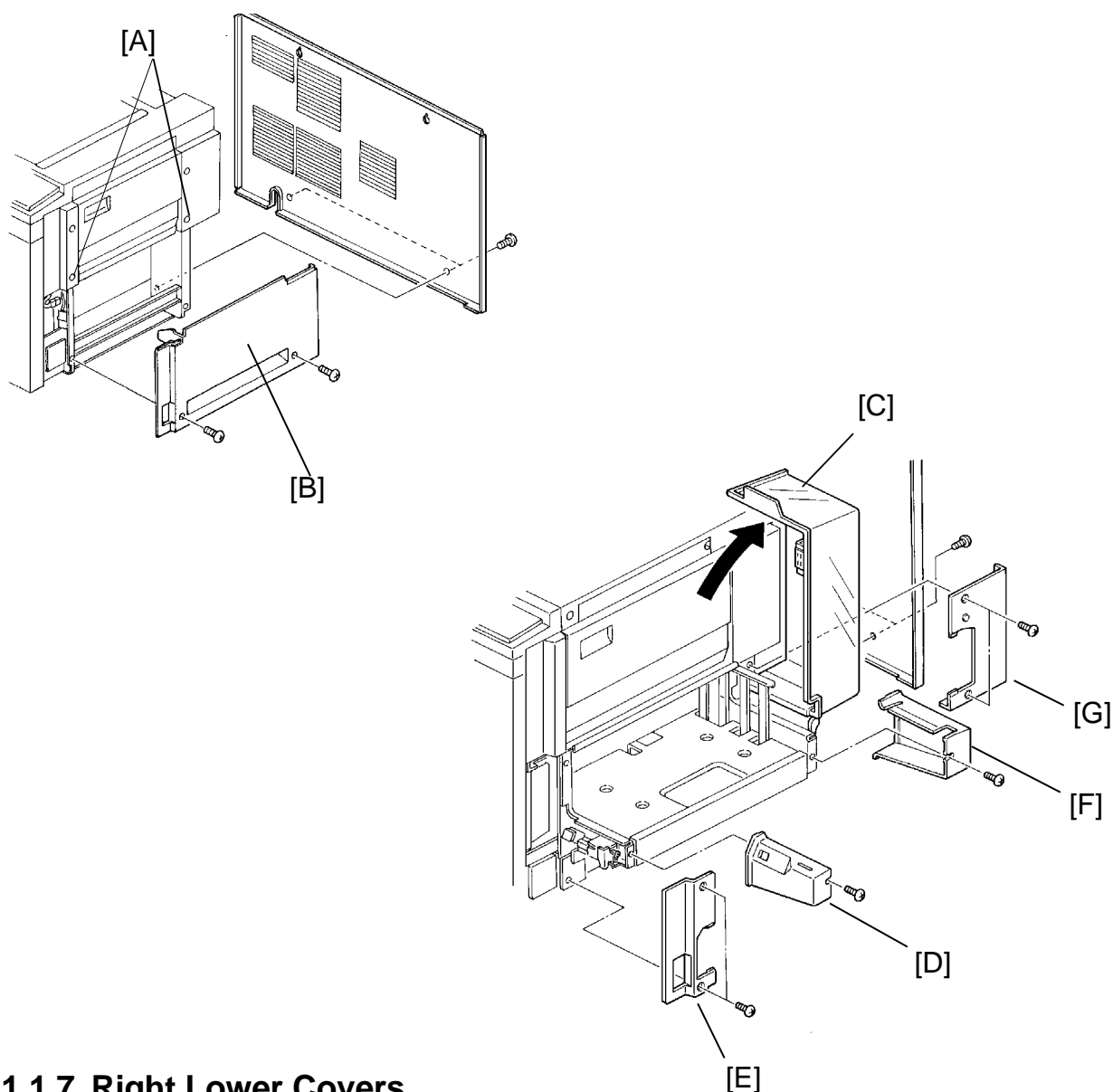
1. Remove the left cover.
2. Remove the left bottom cover [E] (4 screws).

NOTE: Remove the sorter, (sorter stapler) and sorter adapter if they are installed.

1.1.6 Right Upper Cover



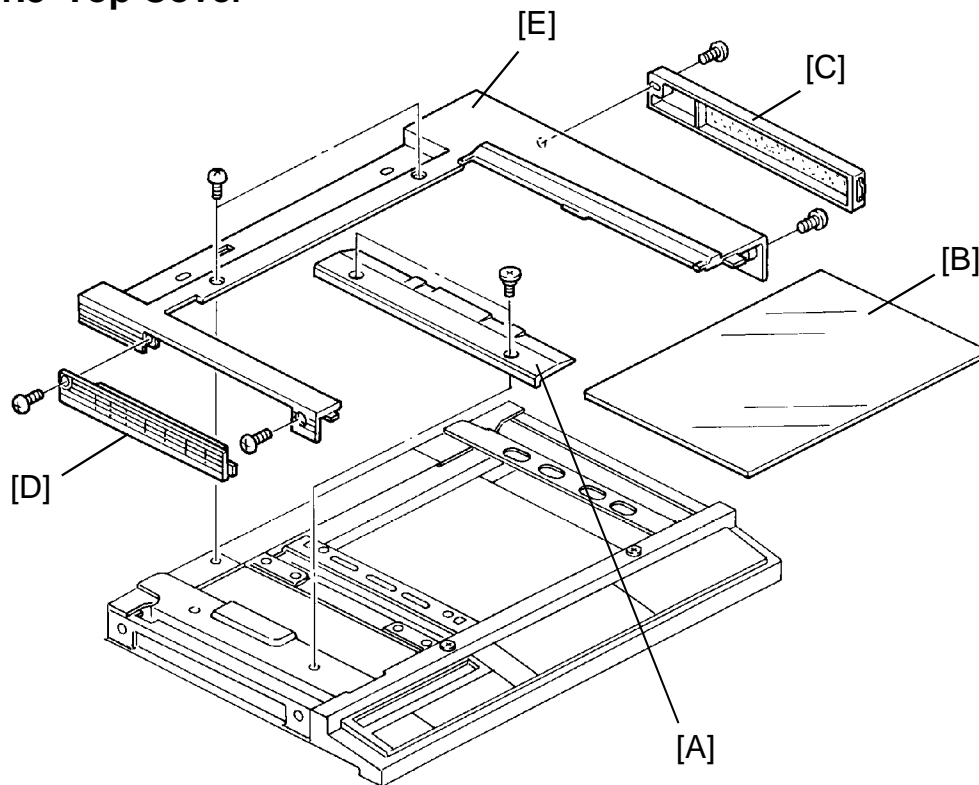
1. Remove the rear cover.
2. Remove 4 screws of the right upper cover [A].
3. Open the LCT top cover [B].
4. Open the by-pass feed table [C] and remove the right upper cover.



1.1.7 Right Lower Covers

1. Open the LCT top cover [C].
2. Remove the LCT front cover [D] (1 screw).
3. Remove the right lower front cover [E] (2 screws).
4. Close the LCT top cover.
5. Remove the LCT rear cover [F] (1 screw).
6. Remove the right lower rear cover [G] (2 screws).

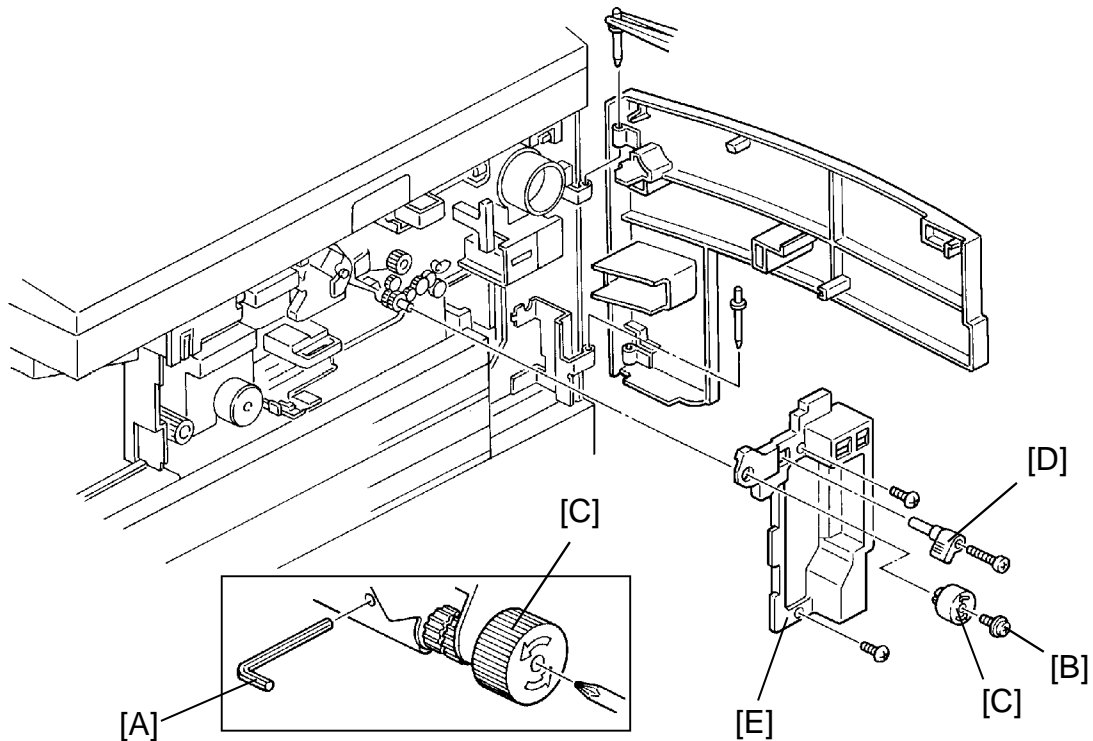
1.1.8 Top Cover



NOTE: Remove the document feeder or platen cover if either is installed.

1. Remove the left scale [A] (2 shoulder screws).
2. Remove the exposure glass [B].
3. Remove the right and left optics covers [C, D] (1 screw each).
4. Remove the top cover [E] (4 screws).

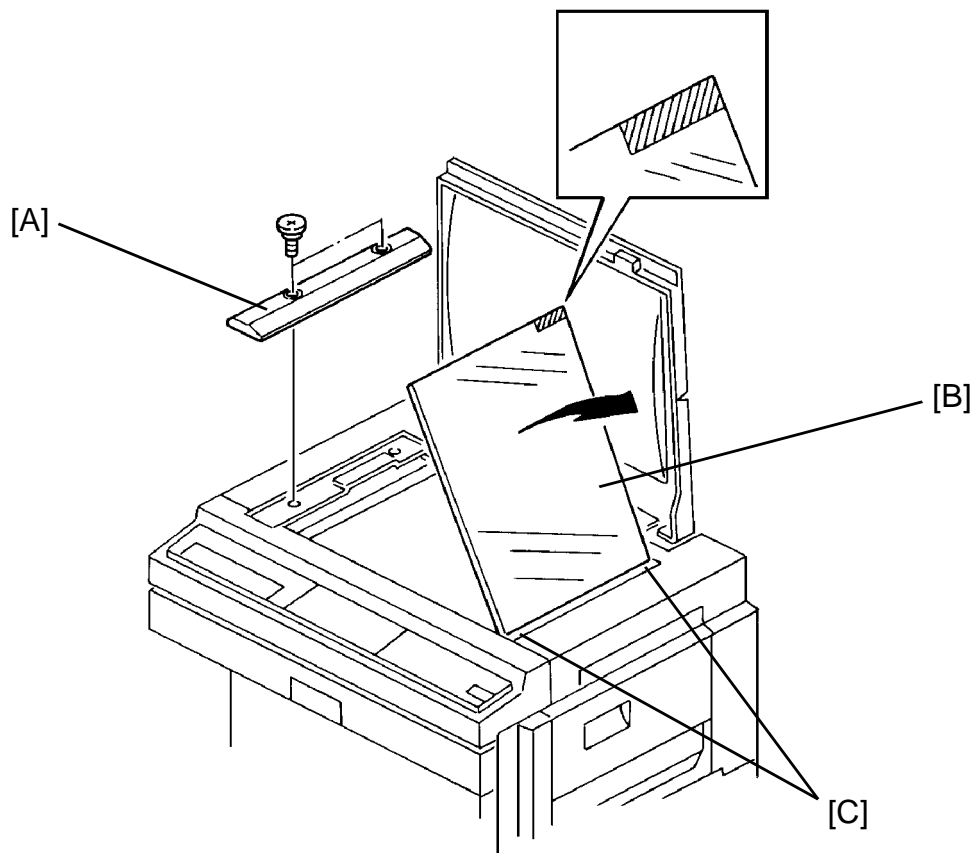
1.2 INNER COVER REMOVAL



1. Open the front door and remove.
2. Insert an Allen key [A] in the hole of the registration roller shaft through a hole in the bracket.
3. While holding the Allen key, remove the fixing screw [B].
4. Remove the registration knob [C] and paper guide release lever [D] (1 screw each).
5. Remove the inner cover [E] (2 screws).

2. OPTICS

2.1 EXPOSURE GLASS REMOVAL

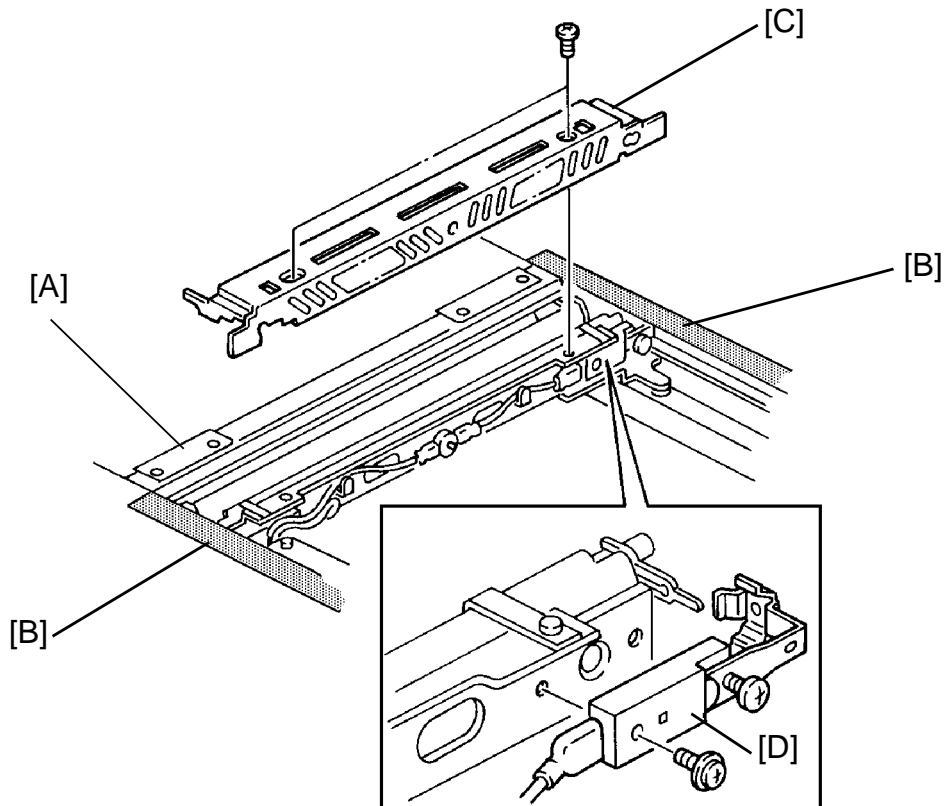


1. Remove the left scale [A] (2 shoulder screws).
2. Grasp the left edge of the exposure glass [B] and lift up slightly. Slide the other edge out from under the right glass holder [C]. Remove the exposure glass.

NOTE: When reinstalling the exposure glass, make sure of the following:

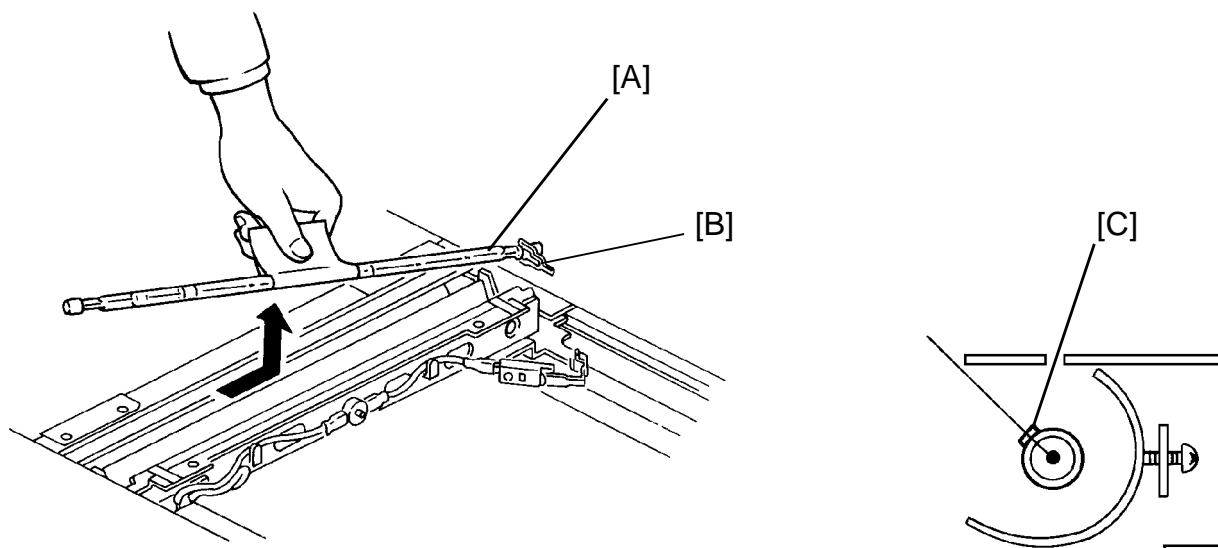
- a) That the red mark on the edge of the glass faces up. This side is smoother and it generates less static electricity when the DF is used.

2.2 EXPOSURE LAMP REPLACEMENT



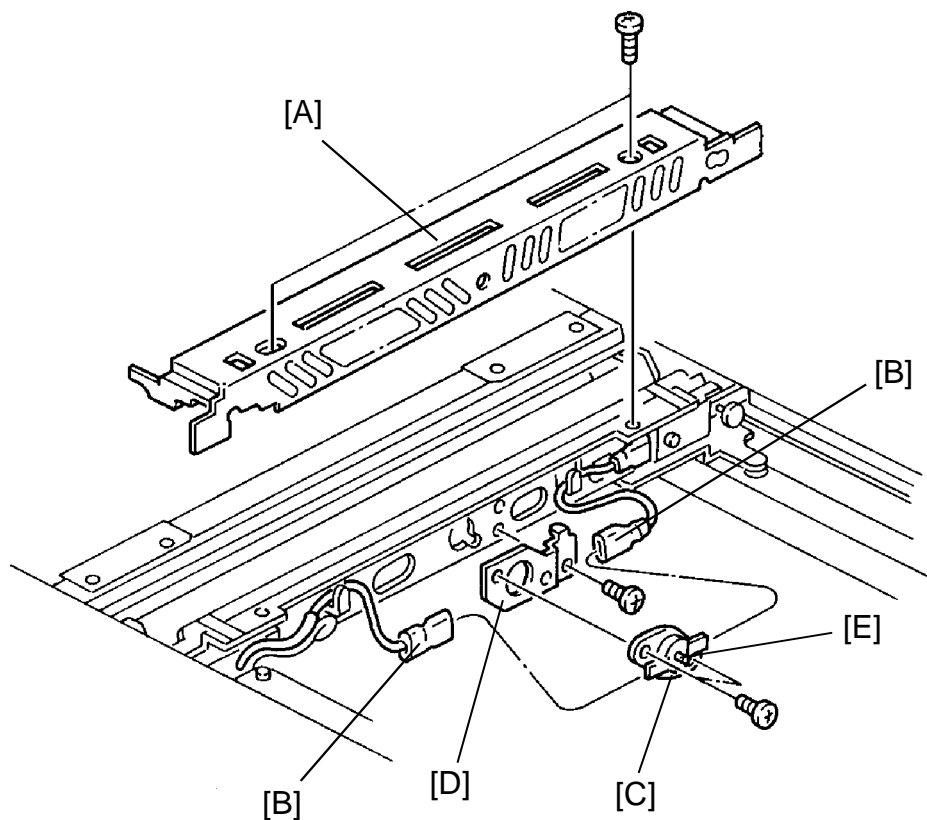
NOTE: Do not touch the reflector or the new exposure lamp with your bare hands. Use a strip of paper as shown over page. (Oil marks from fingers on the lamp or reflectors will be affected by heat from the lamp and will cause discoloration.)

1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the first scanner [A] to the cutout position at the front and rear frames [B]. (See illustration.)
4. Remove the reflector cover [C] (2 screws).
5. Remove the rear terminal bracket [D] (1 screw).



6. Remove the exposure lamp [A] from the front terminal by moving the lamp toward the rear.
7. Install a new lamp. Use a strip of paper as shown to hold the lamp. Reassemble the rear terminal bracket while confirming that the lamp is properly set by both terminals and the clip [B] is set properly.
NOTE: Make sure that the blister [C] on the lamp points towards the reflector opening (left side of the copier) as shown.
8. Reassemble the copier.
9. Check the exposure lamp voltage setting [X] by SP48.
10. Check the target lamp voltage [Y] by SP51 (press "." key for reading).
11. Perform the forced VL detection (SP70) [Y-X] times.
12. Check the target lamp voltage by SP51.
13. Perform the forced VL detection (SP70) a few more times.
14. Check the target lamp voltage [Z] by SP51 again and confirm that the voltage [Z] is the same as that in step 12. If not, repeat the forced VL detection (SP70) until the voltage [Z] does not change.
15. Perform the auto ADS gain adjustment (SP56).
16. Adjust the ADS density (SP34) if necessary.

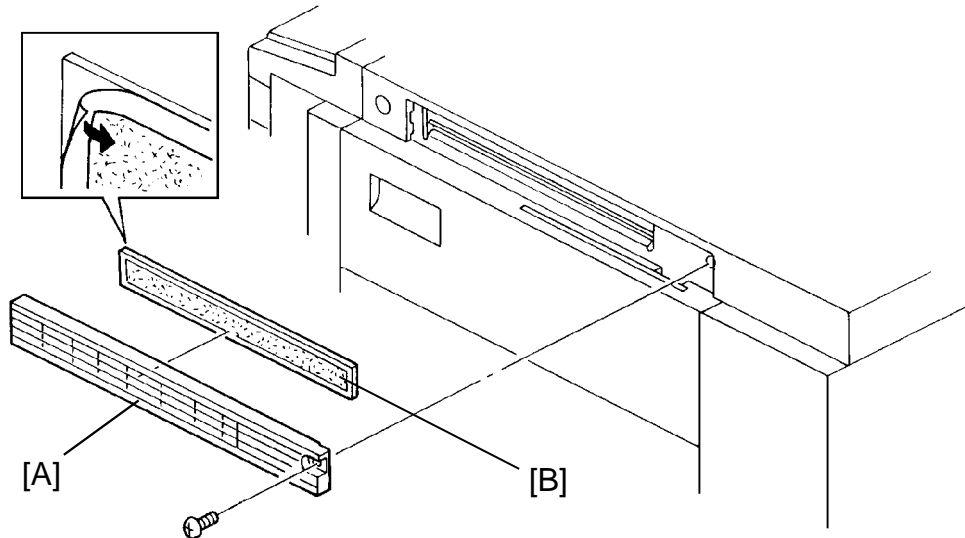
2.3 OPTICS THERMOSWITCH REPLACEMENT



NOTE: The thermoswitch can be reset manually to push the red button [E] when the exposure lamp area cools.

1. Turn off the main switch.
2. Remove the exposure glass.
3. Slide the 1st scanner about 150 mm (6") to the right.
4. Remove the reflector cover [A] (2 screws).
5. Remove the exposure lamp leads [B] from the terminals on both sides of the thermoswitch [C].
6. Remove the thermoswitch bracket [D] (1 screw).
7. Remove the thermoswitch from the bracket (2 screws), and replace it.

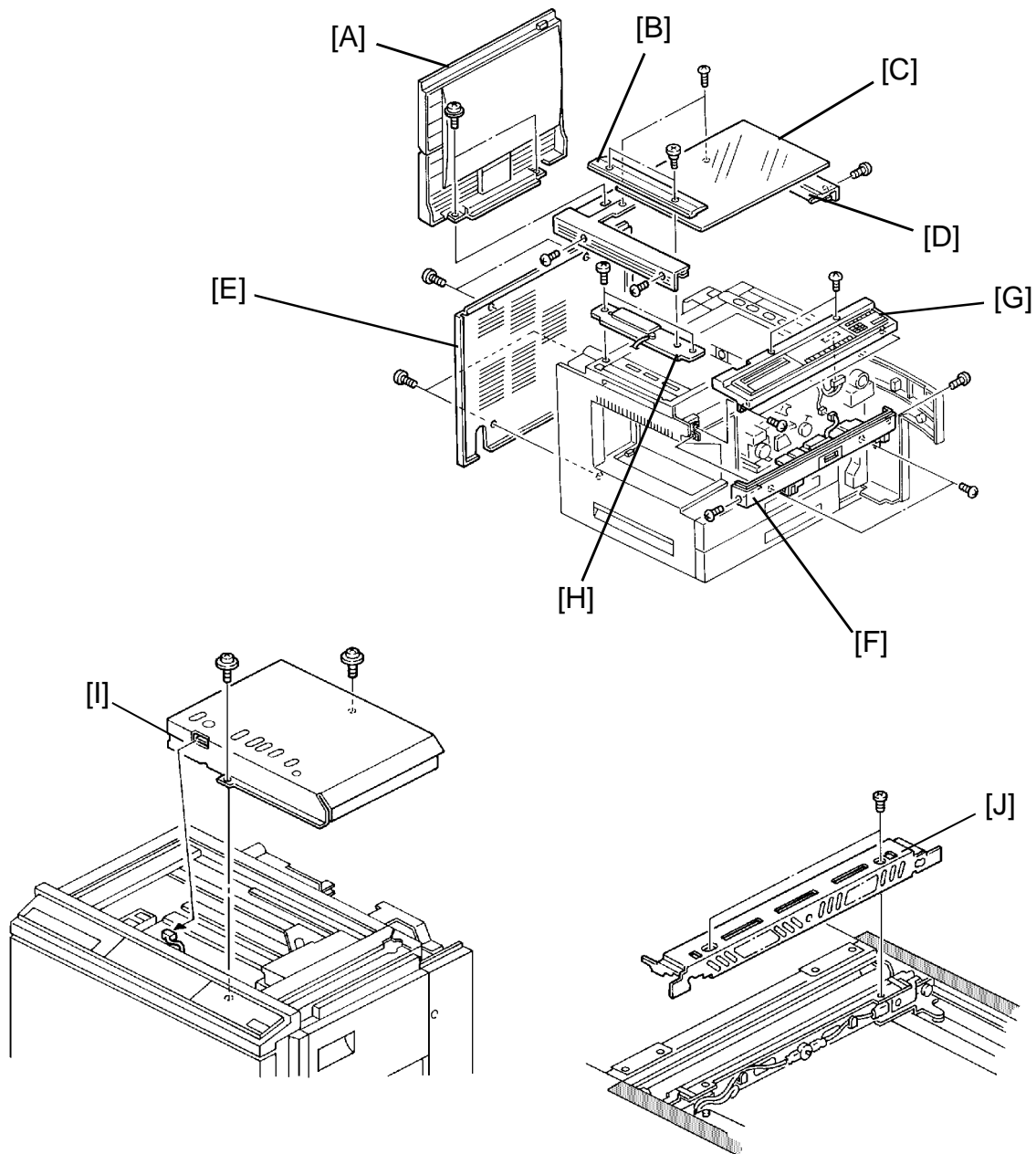
2.4 OPTICS FAN FILTER CLEANING AND REPLACEMENT



1. Turn off the main switch.
2. Remove the right optics cover [A] (1 screw).
3. Clean or replace the optics fan filter [B].

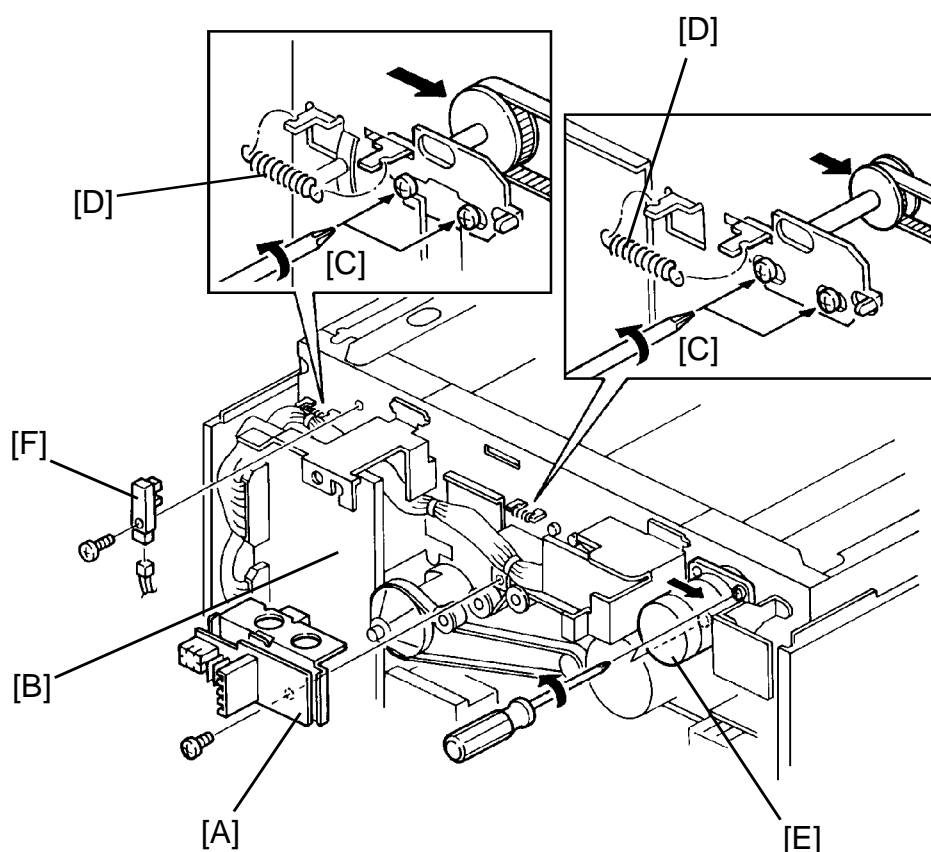
2.5 SCANNER DRIVE BELT REPLACEMENT

2.5.1 Belt Removal



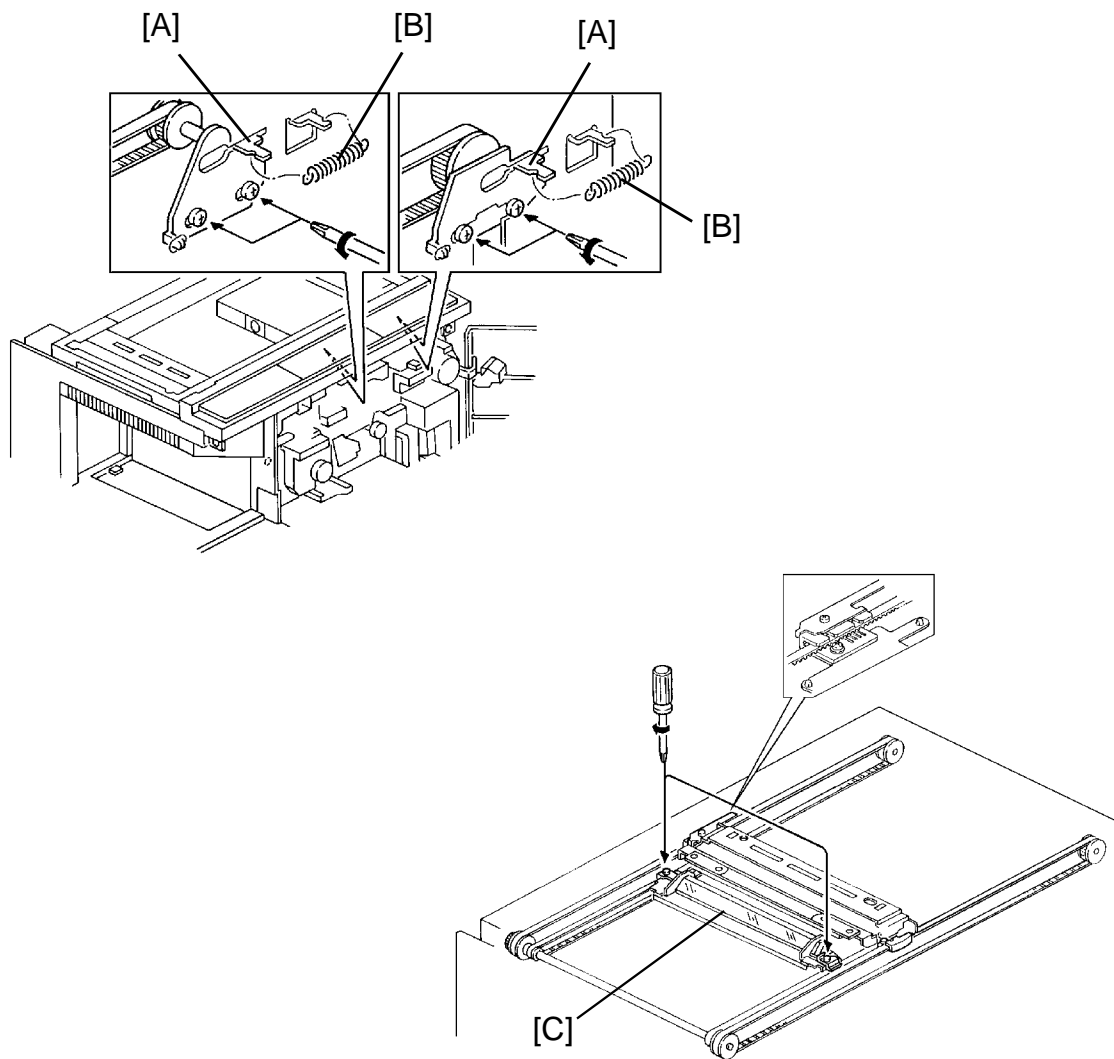
1. Remove the following parts:

- Platen cover or ADF [A]
- Left scale [B] (2 shoulder screws)
- Exposure glass [C]
- Top cover [D] (6 screws)
- Rear cover [E] (loosen 2 screws and remove 2 screws)
- Front upper cover [F] (3 screws)
- Operation panel [G] (4 screws and 2 connectors)
- Left scale bracket [H] (2 screws, 1 connector and 1 harness clamp)
- Lens cover [I] (2 screws and 1 connector)
- Reflector over [I] (2 screws)



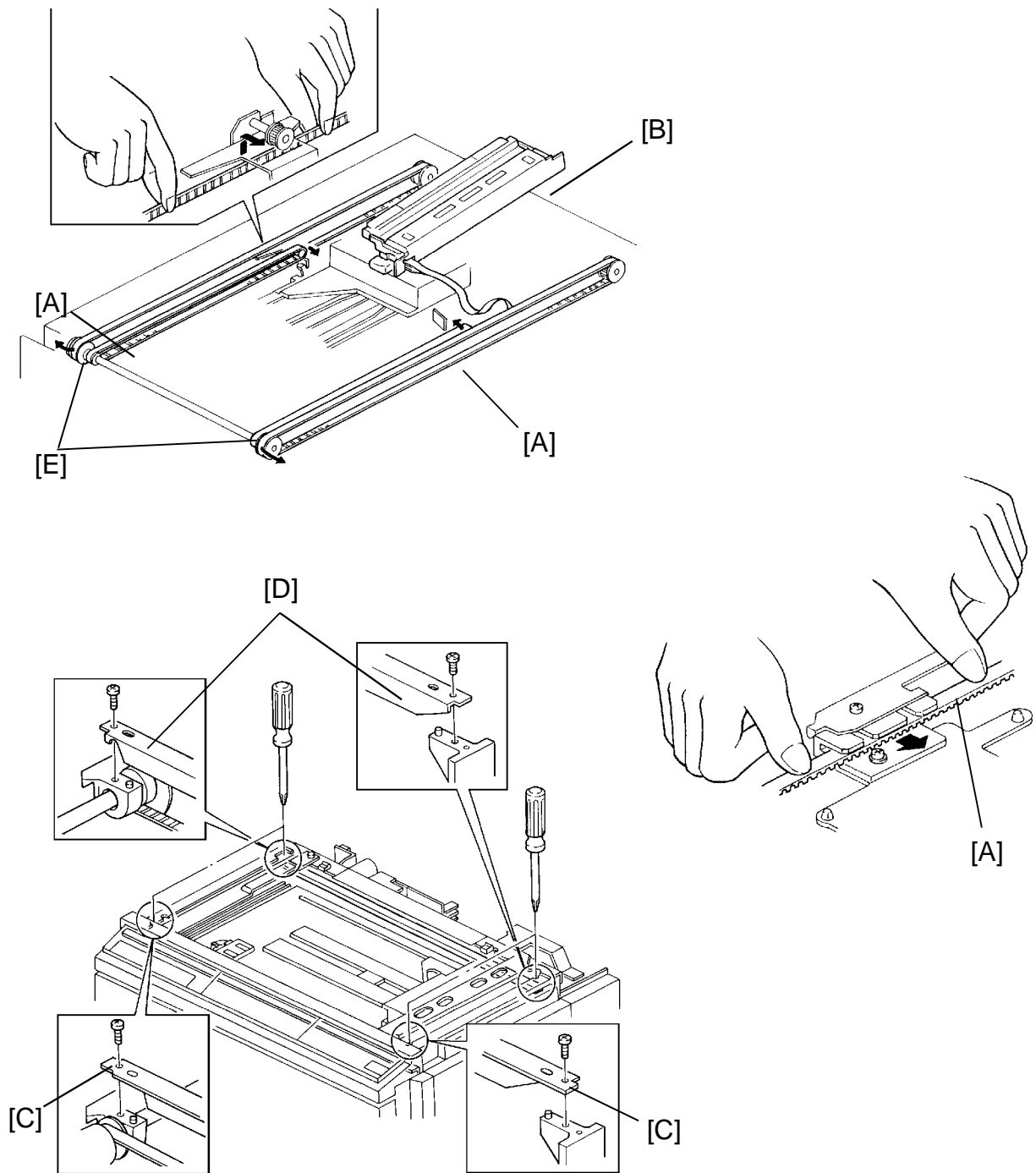
<Rear side of the scanner drive belts>

2. Remove the PTL/QL stabilizer [A] (1 screw, 6 connectors, 2 wire saddles).
3. Swing out the main control board assembly [B] (1 screw).
4. Loosen the screws [C] for the tension brackets of the long and short scanner drive belts (2 screws each).
5. Remove 2 tension springs [D].
6. Remove the scanner drive motor [E] (2 screws, 1 connector).
7. Remove the 3rd scanner home position sensor [F] (1 screw).



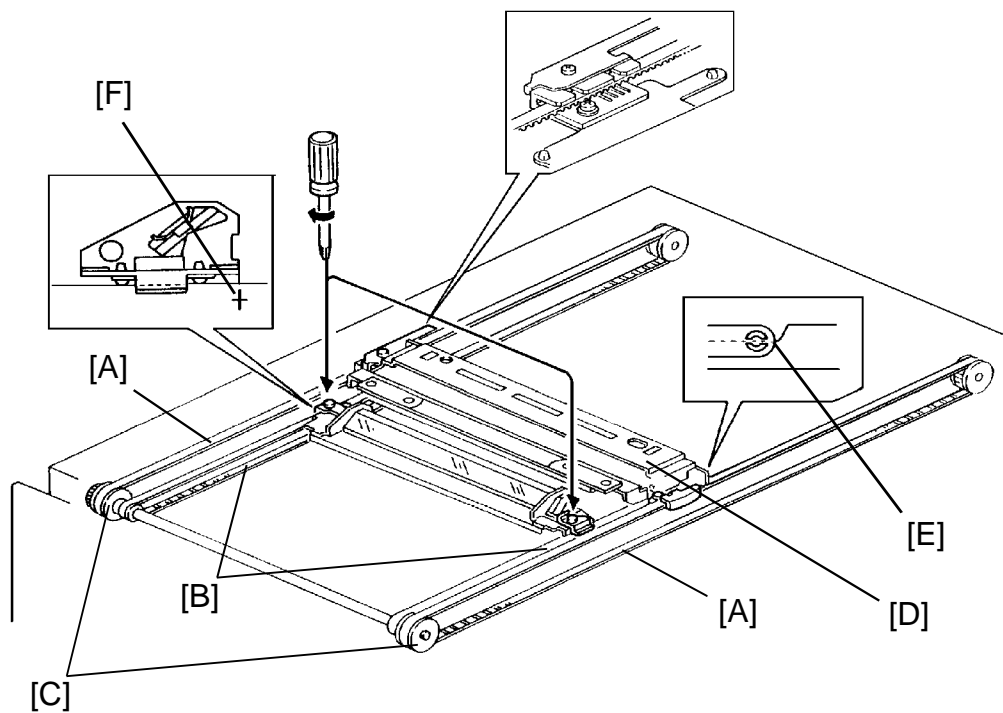
<Front side of the scanner drive belts>

8. Loosen the screws for the tension bracket [A].
9. Remove 2 tension springs [B].
10. Remove the 2nd scanner [C] (loosen 2 screws).



11. Unhook the long timing belt [A] from the belt clamp of the 1st scanner and put the 1st scanner [B] on the machine as shown.
12. Remove the front and rear guide rails [C, D] (2 screws each).
13. Remove the short and long scanner drive belts as shown [A, E].

2.5.2 Belt Installation



1. Install the short and long scanner drive belts [A, B] or both sides.

NOTE: Put the short scanner drive belt on to the left pulley [C] first.

2. Reinstall the 4 tension springs and tighten the 4 tension brackets (2 screws each).
3. Reinstall the front and rear guide rails (2 screws each).
4. Reinstall the timing belt and scanner drive motor (2 screws and 1 grounding wire).
5. Set the 1st scanner [D] at the position [E] as shown, and insert the long scanner drive belt to the belt clamp.
6. Set the 2nd scanner at the position [F] as shown and install the belt clamp for the short scanner drive belt (1 screw each).

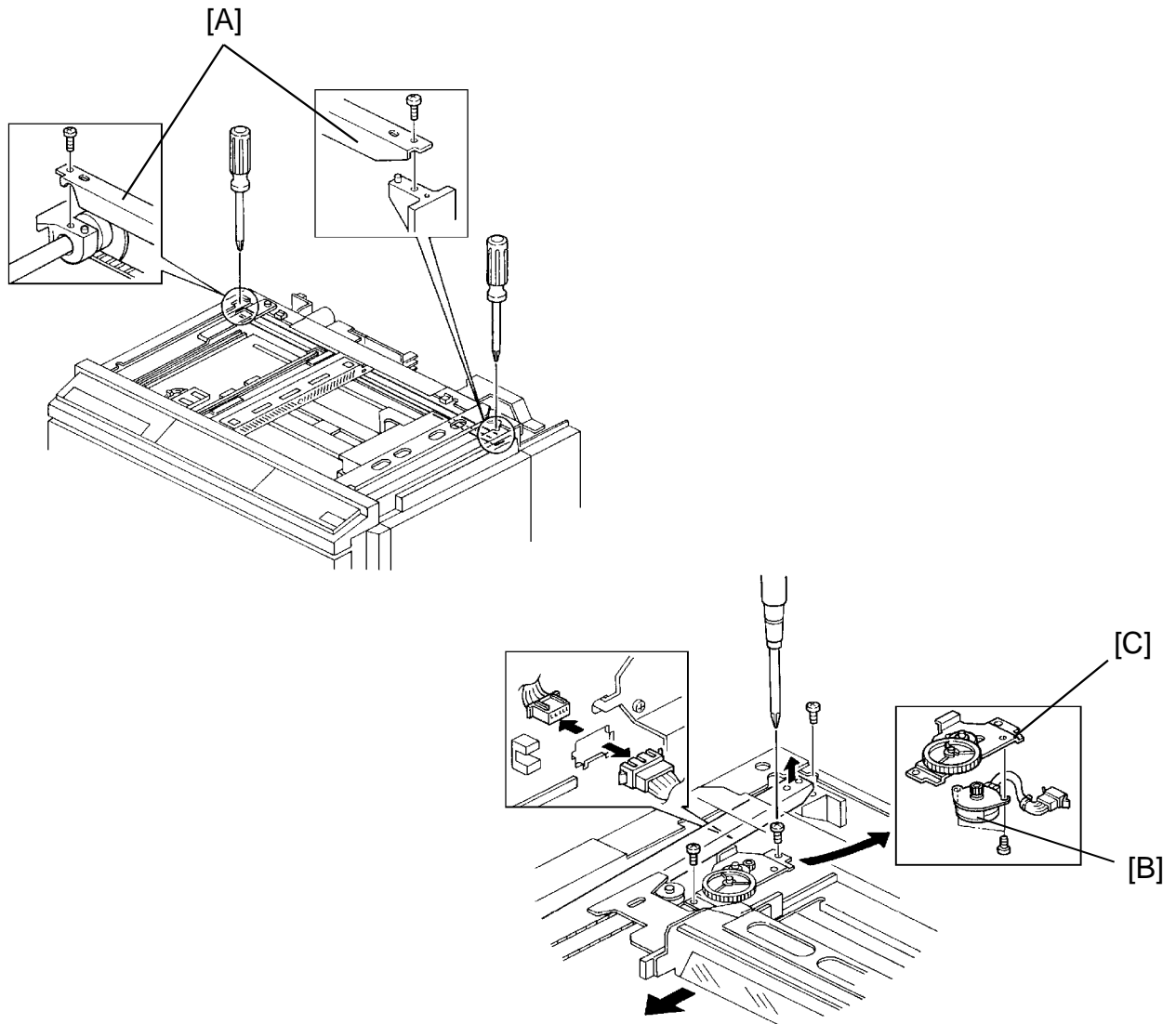
NOTE: When fixing the 2nd scanner, make sure the 1st scanner is set at the position [E] (step 5).

7. Reassemble all the necessary parts.

2.5.3 1st and 2nd Scanner Position Adjustment

1. Make a copy sample performing the vertical, and horizontal magnification adjustments, and then perform the focus adjustment. (See vertical magnification, horizontal magnification, and focus adjustments.)

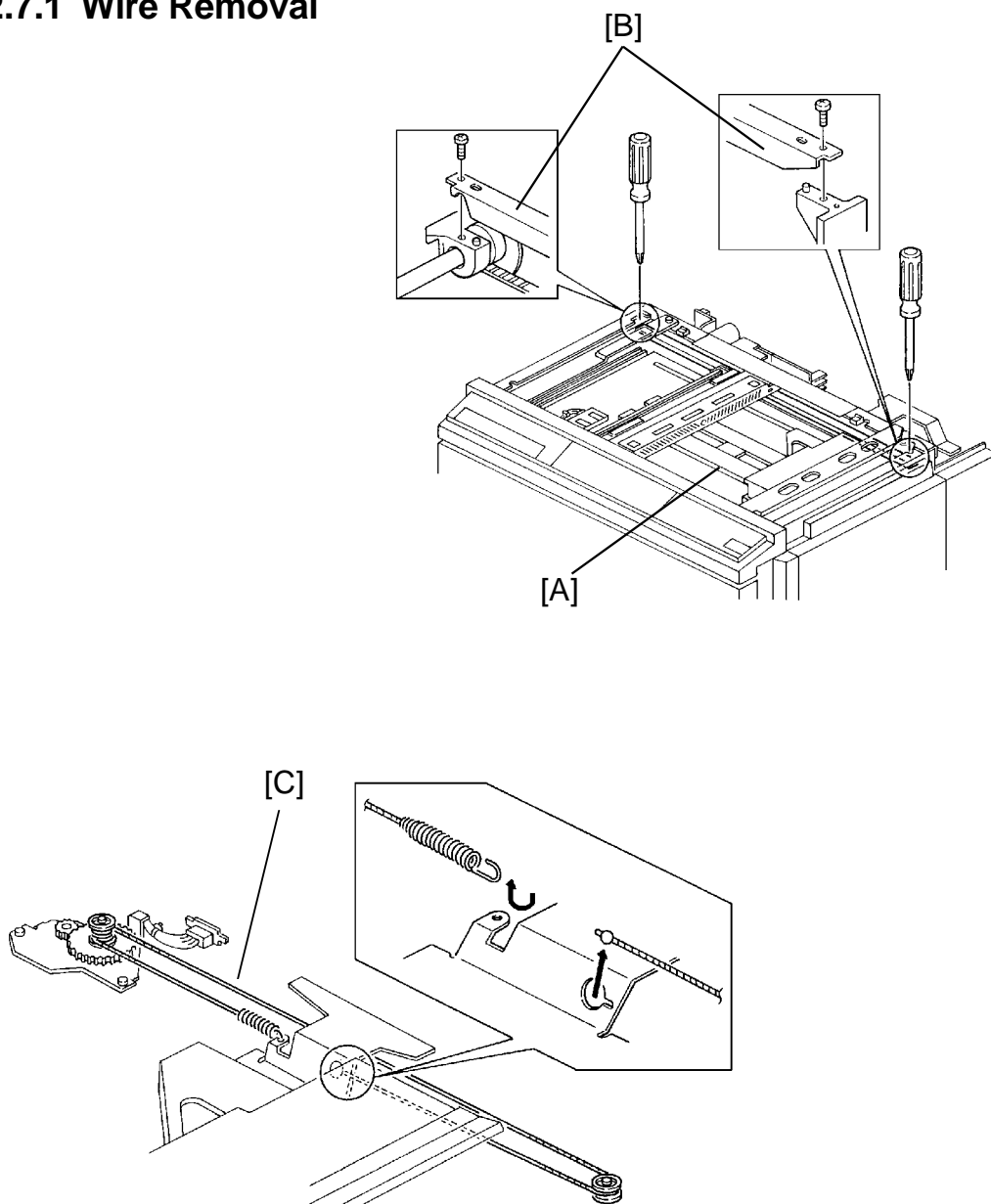
2.6 3RD SCANNER DRIVE MOTOR REPLACEMENT



1. Turn off the main switch.
2. Remove the following parts:
 - The exposure glass
 - The top cover
 - The rear cover
 - The lens cover
3. Remove the 2 fixing screws of the rear scanner guide rail [A].
4. Slide the 3rd scanner to the left.
5. While holding up the rear scanner guide rail, remove the 3rd scanner drive motor assembly (2 screws and 1 connector).
6. Separate the motor [B] from the bracket [C] (2 screws) and replace.

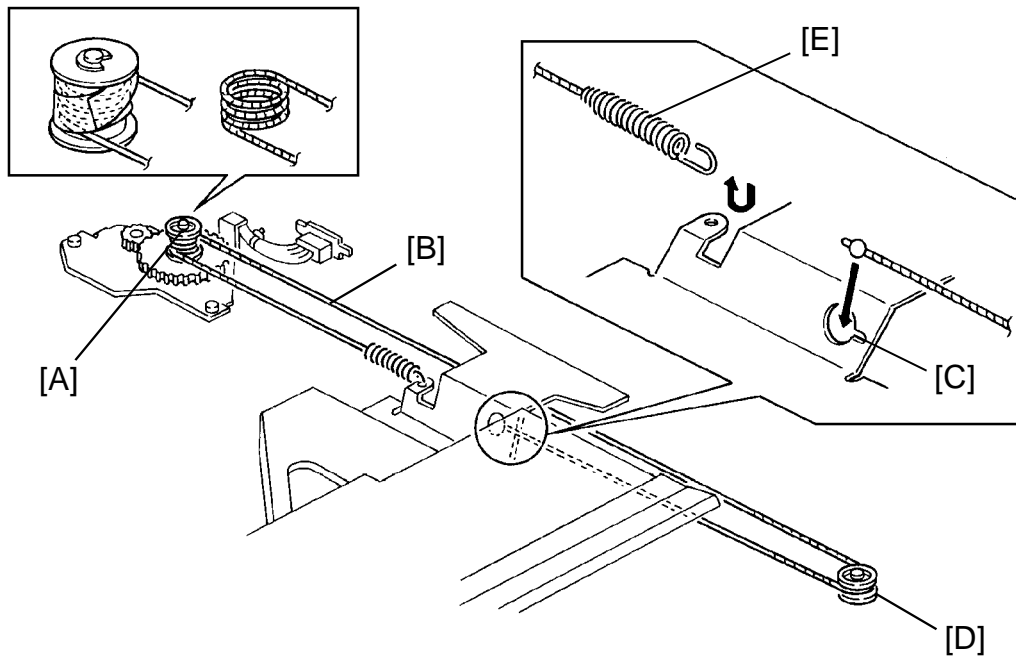
2.7 LENS DRIVE WIRE REPLACEMENT

2.7.1 Wire Removal



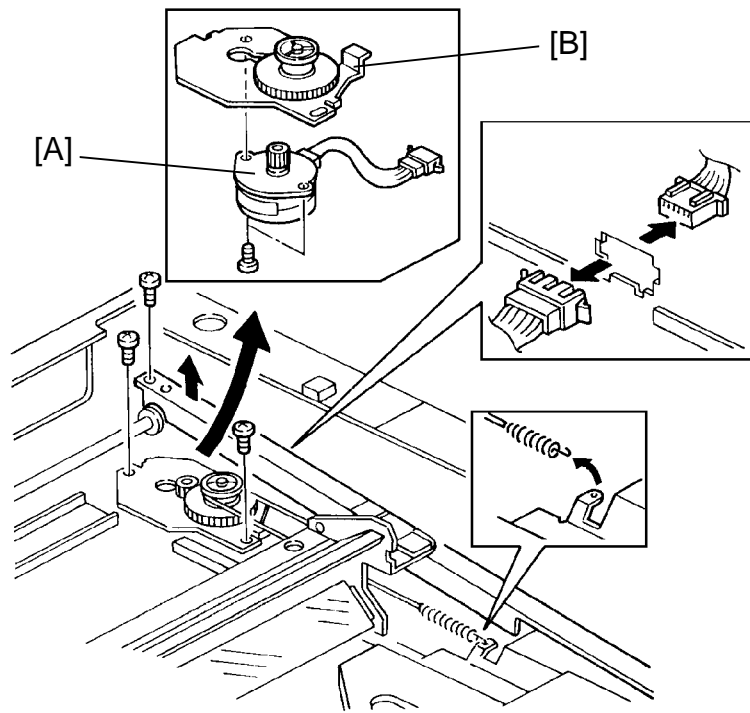
1. Turn off the main switch.
2. Remove the following parts:
 - The exposure glass
 - The top cover
 - The rear cover
 - The lens cover
 - The left scale bracket
3. Slide the 1st scanner [A] half of the way to the right.
4. Remove the 2 fixing screws of the rear scanner guide rail [A].
5. Remove the lens drive wire [B] as shown.

2.7.2 Wire Installation



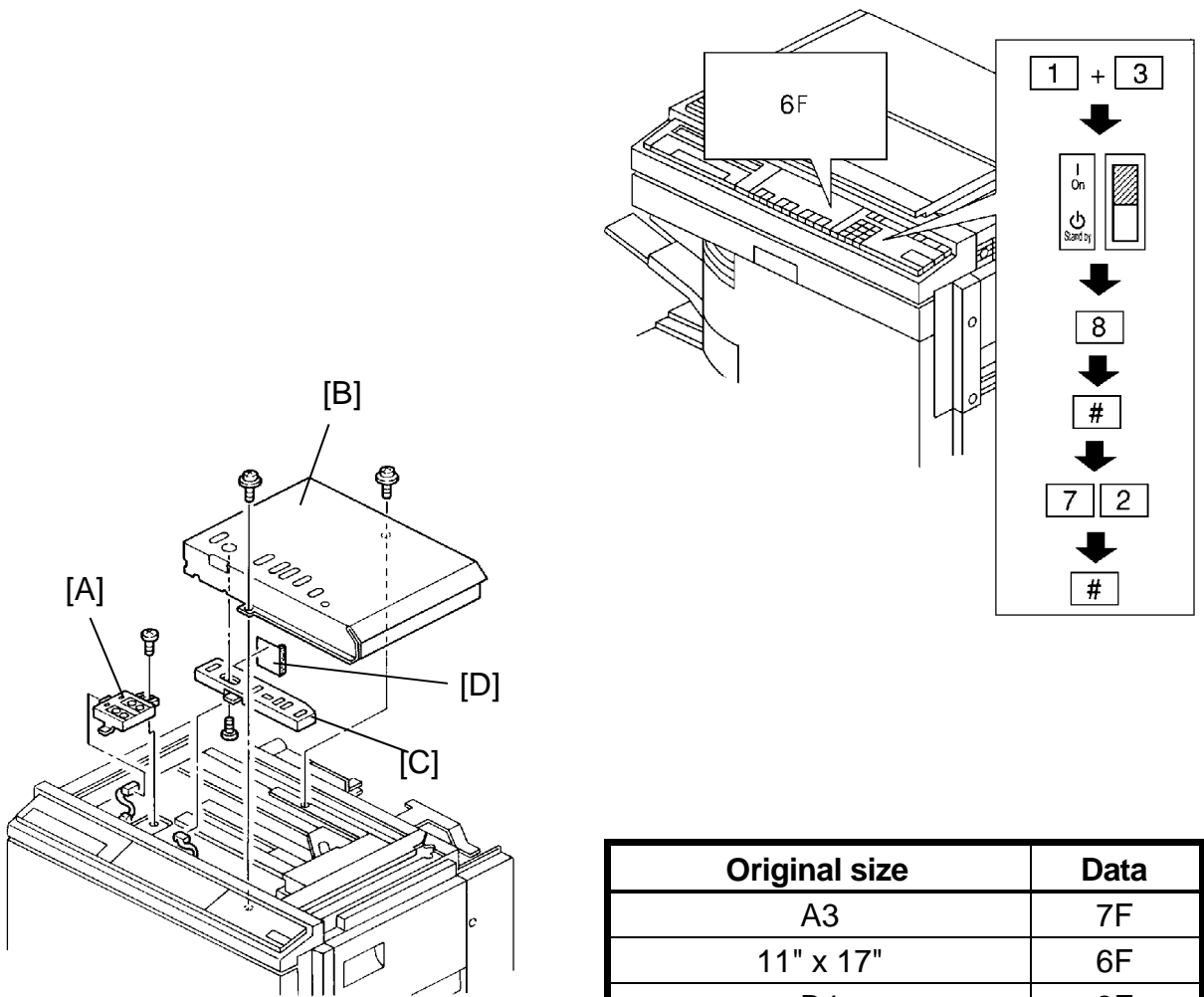
1. Remove the pulley [A] (1 E-ring).
2. Wind the lens drive wire [B] three and a half turns around the pulley and then wrap the pulley with tape as shown.
3. Reinstall the pulley.
4. Position the wire in the cutout of the shutter plate [C] and pulley [D].
5. Hook the spring [E] as shown.

2.8 LENS DRIVE MOTOR REPLACEMENT



1. Remove the lens drive wire (see Lens Drive Wire Replacement).
2. Remove the lens drive motor assembly (2 screws and 1 connector).
3. Separate the motor [A] from the bracket [B] (2 screws) and replace.

2.9 ORIGINAL SIZE SENSORS REPLACEMENT



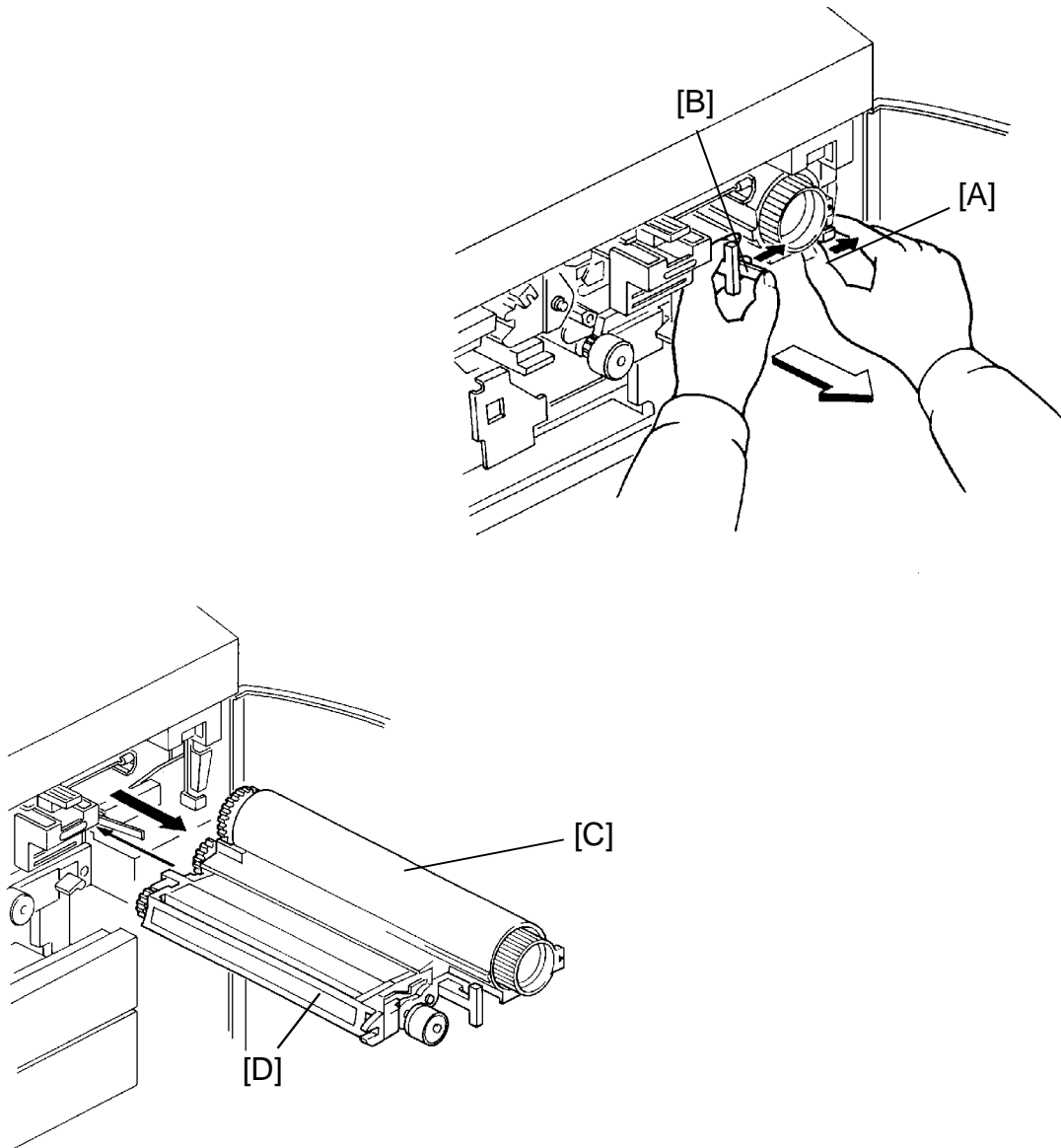
Original size	Data
A3	7F
11" x 17"	6F
B4	3F
A4 Lensthwise	E
A4 sideways/81/2" x 11" lengthwise	7
B5 length wise	6
B5 sideways/81/2" x 11" sideways	3

1. Turn off the main switch.
2. Remove the exposure glass.
3. Replace the original width sensor [A] (1 screw and 1 connector).
4. Remove the lens cover [B] (2 screws and 1 connector).
5. Separate the original length sensor [C] from the lens cover (1 screw) and replace.
6. Remove the mylar [D] from the old original size sensor and reinstall it on the new original size sensor as shown.
7. Reassemble all the parts.
8. Check the original size sensor's function by SP#8 (input no.72).

3. DEVELOPMENT AND TONER SUPPLY

3.1 DEVELOPMENT UNIT REMOVAL

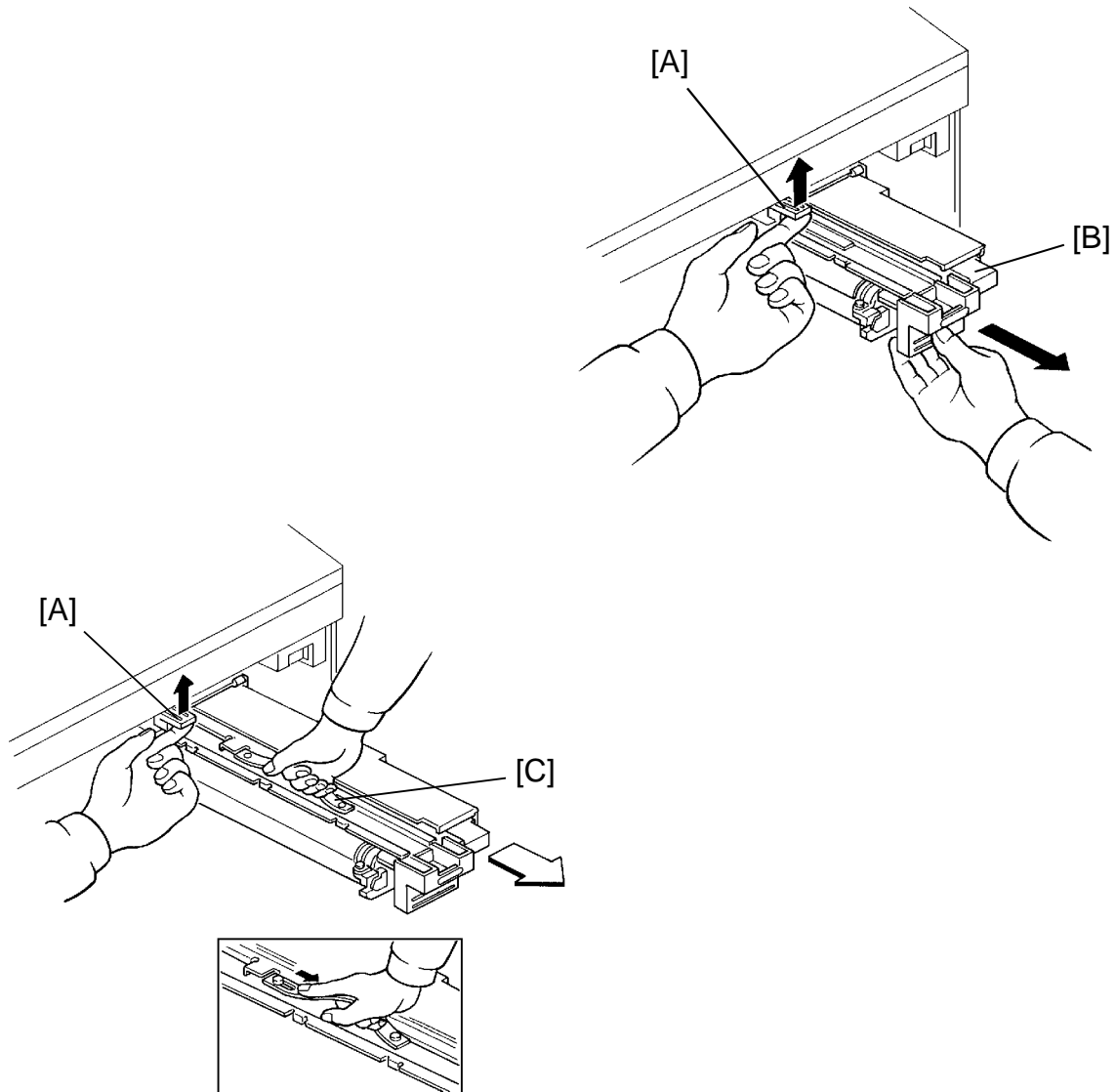
3.1.1 Black Development Unit



1. Open the front door.
2. Push the development unit lock lever [A] to the right (to the lock position).
3. Move the development release lever [B] to the right and pull out the black development unit [C] half way. Holding the toner supply unit [D] with your right hand and the bottom of the development unit with your left hand, pull the unit all the way out. Place the unit on a clean sheet of paper.

NOTE: The color development unit or cover plate should be installed before installation.

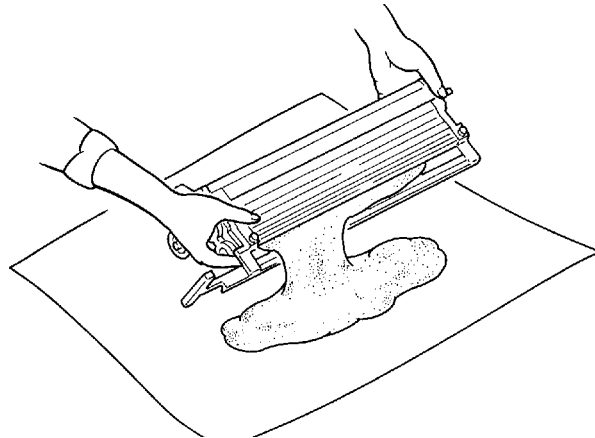
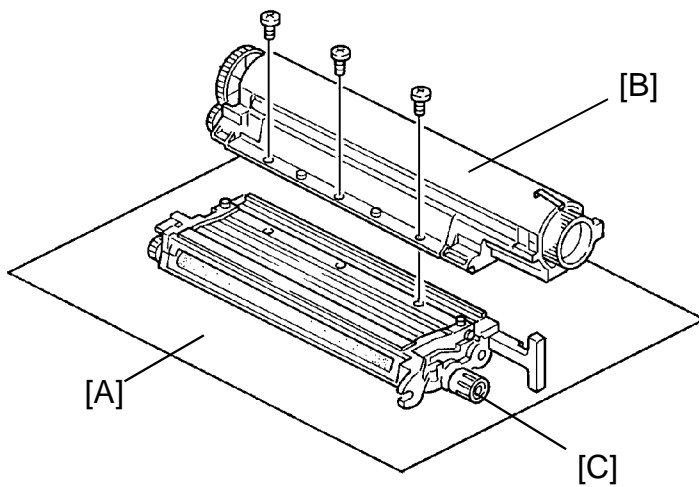
3.1.2 Color Development Unit



1. Open the front door.
2. While lifting the color development unit lock lever [A], pull out the color development unit [B] until it stops.
3. Holding the strap [C] of the color development unit with the left hand, pull out the color development unit while lifting the color development unit lock lever.

3.2 DEVELOPER REPLACEMENT

3.2.1 Black Developer (SP#65)

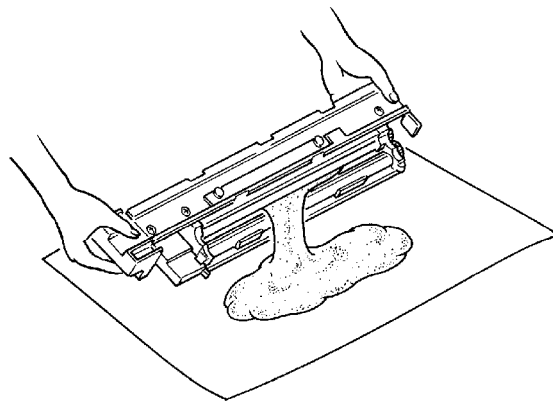
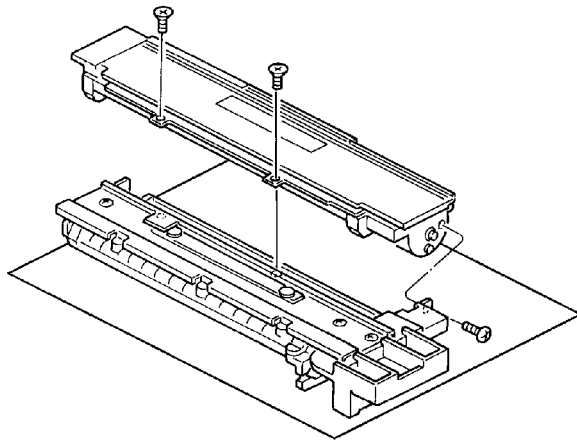


1. Take out the development unit.
2. Set the development unit on a large sheet of paper [A].
3. Remove the toner supply unit [B] (3 screws).
4. Turn the paddle roller knob [C] counterclockwise to empty developer onto the paper.

NOTE: Dispose of the used developer according to local regulations.

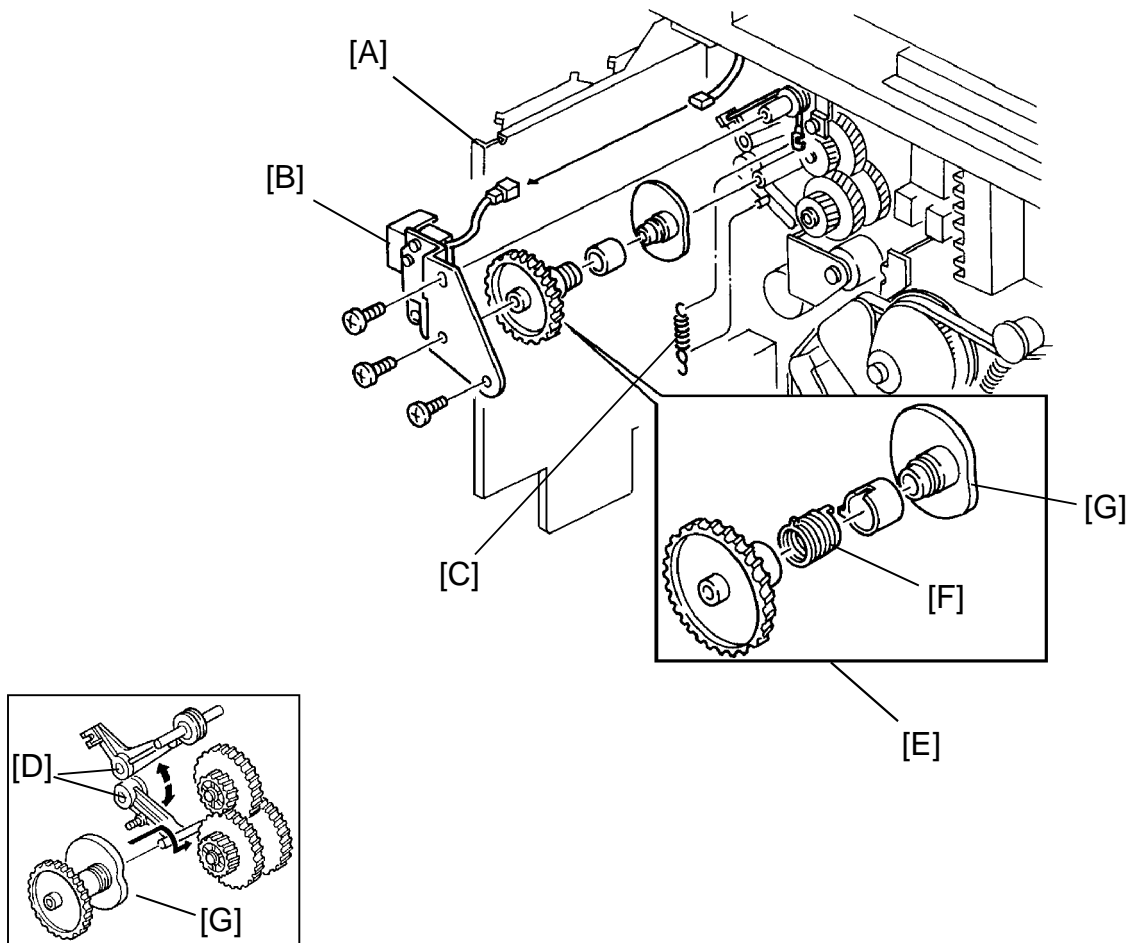
5. Make sure that no developer remains on the development roller or in the development unit.
6. Pour one pack of developer into the development unit while turning the paddle roller knob.
7. Reinstall the toner supply unit and set the development unit in the machine.
8. Perform initial setting for new black developer using SP65.

3.2.2 Color Developer (SP #10)



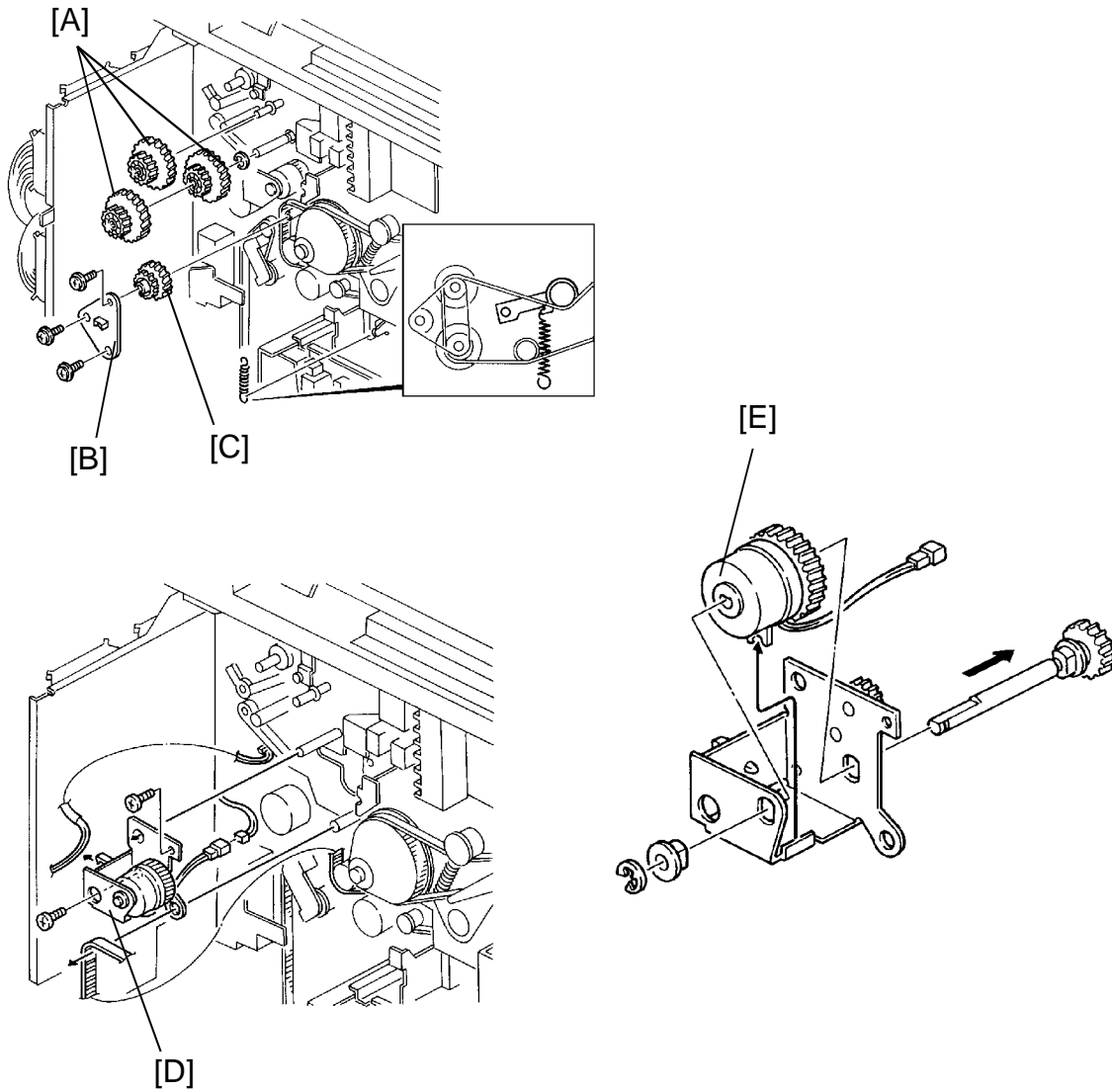
1. Take out the color development unit.
2. Put the color development unit on a large sheet of paper [A].
3. Remove the toner supply unit [B] (3 screws).
4. Turn the paddle roller knob counterclockwise to empty developer onto the paper.
NOTE: Dispose of the used developer according to local regulations.
5. Make sure that no developer remains on the development roller or in the development unit.
6. Pour one pack of developer into the development unit while turning the paddle roller knob.
7. Reinstall the toner supply unit and set the color development unit in the machine.
8. Perform initial setting for new color developer using SP10.

3.3 DEVELOPMENT UNIT SHIFT CLUTCH LUBRICATION



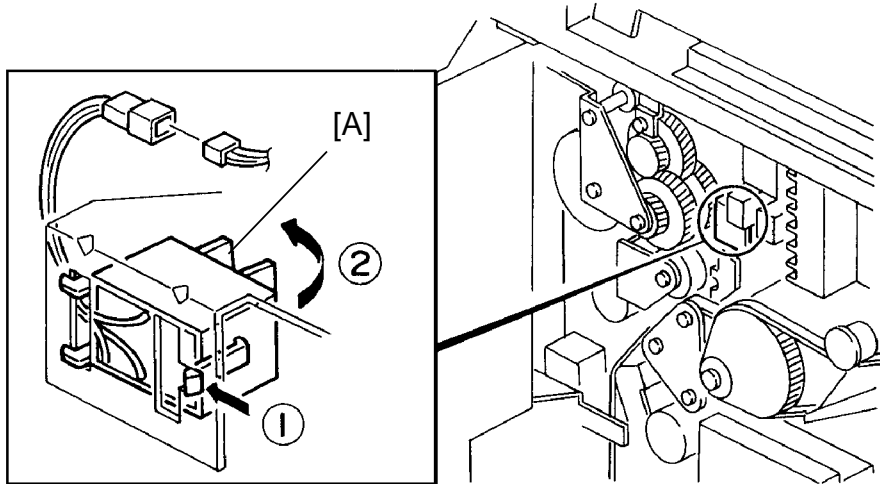
1. Turn off the main switch.
 2. Remove the rear and right upper cover.
 3. Swing out the main control board assembly [A] (1 screw).
 4. Remove the development unit change solenoid bracket [B] (3 screws).
 5. Remove the development pressure spring [C] and open the development unit change levers [D].
 6. Remove the development unit shift clutch assembly [E].
 7. Lubricate the clutch spring [F] with Mobil Temp. 78 and reassemble the shift clutch.
 8. Reinstall the shift clutch assembly as shown.
 9. Turn the cam plate [G] clockwise about 90°C.
The highest position of the cam plate should be at the top.
- NOTE:** The shift clutch must be reinstalled as an assembly.

3.4 TONER SUPPLY CLUTCH REMOVAL



1. Turn off the main switch.
2. Remove the development unit shift clutch assembly.
3. Remove the 3 gears [A] (1 E-ring).
4. Remove the support bracket [B] (3 screws) and gear [C].
5. Remove the toner supply clutch assembly [D] (2 screws, 1 E-ring, 1 harness clamp, and 1 connector).
6. Remove the toner supply clutch [E] (1 E-ring).

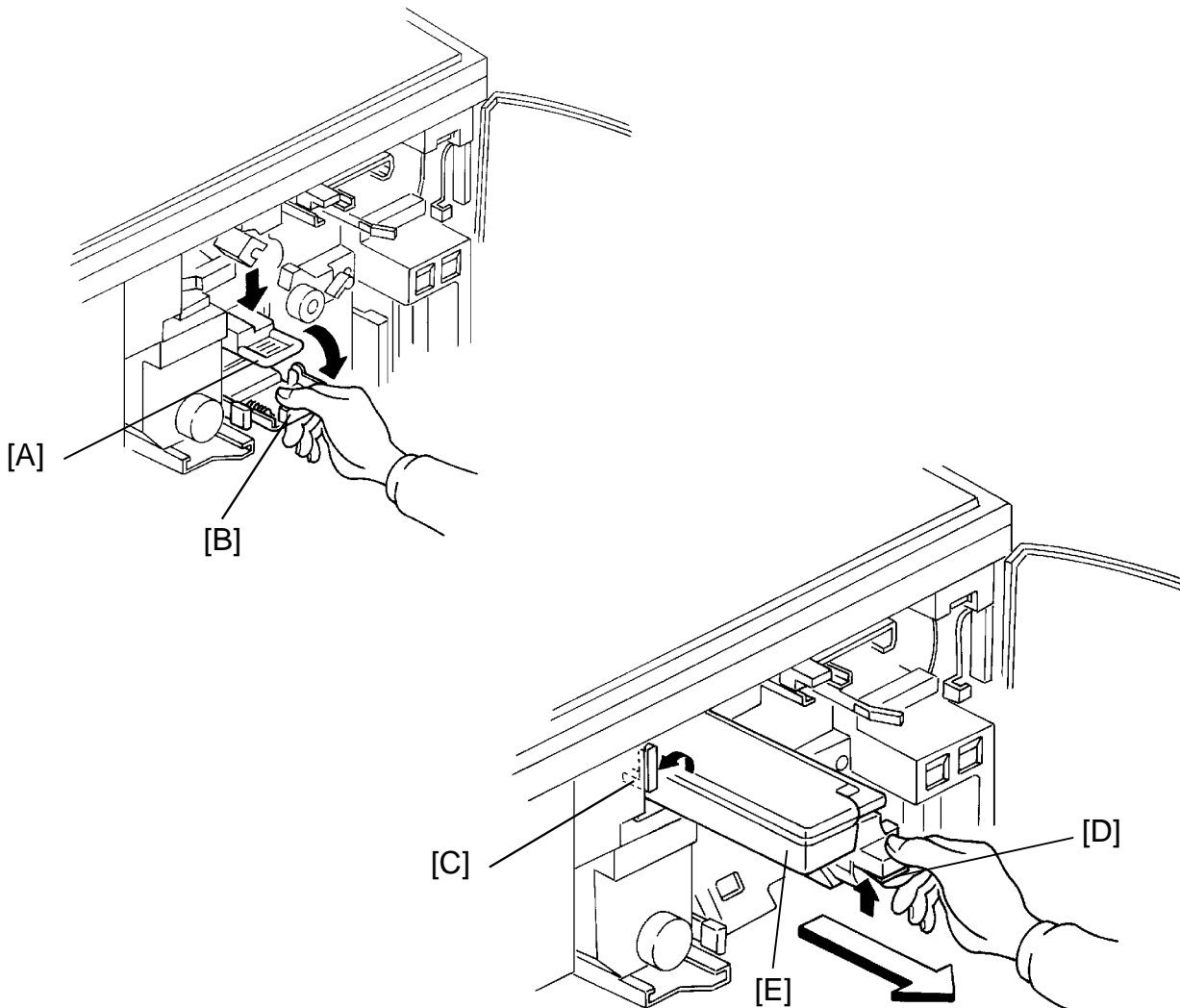
3.5 COLOR DEVELOPMENT SWITCH REPLACEMENT



1. Turn off the main switch.
2. Remove the color development unit.
3. Remove the rear cover.
4. Swing out the main control board assembly (1 screw).
5. Unhook the color development switch [A] and replace (1 connector).

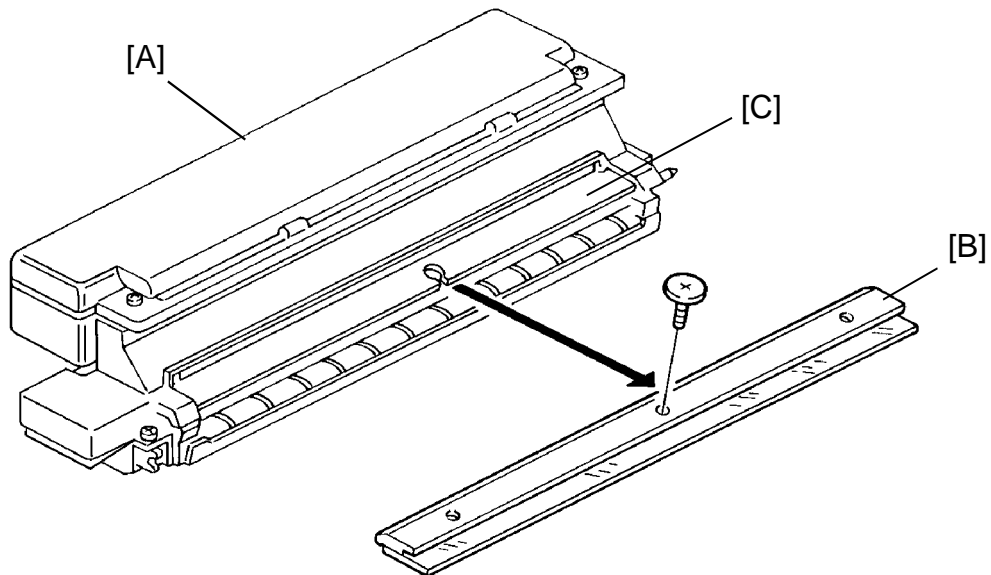
4. CLEANING

4.1 CLEANING UNIT REMOVAL



1. Open the front door and lower the transfer & separation corona unit [A] by pulling down the release lever [B].
2. Place a sheet of paper under the cleaning unit.
3. Turn the cleaning unit release lever [C] counterclockwise.
4. While holding up the cleaning blade release lever [D], pull out the cleaning unit [E]. Place the unit on a clean sheet of paper.

4.2 CLEANING BLADE REPLACEMENT

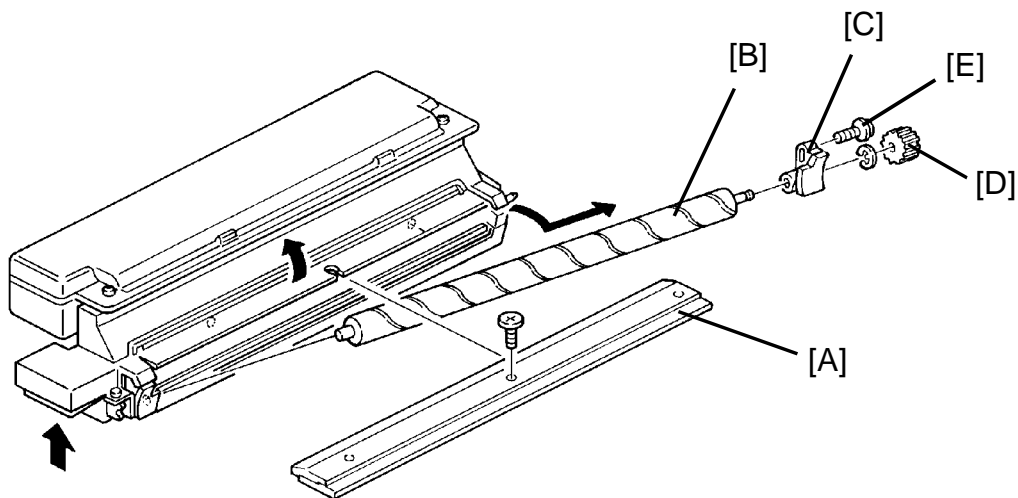


1. Remove the cleaning unit [A] (see Cleaning Unit Removal.)
2. Remove the cleaning blade [B] (1 shoulder screw).
3. While holding up the cleaning blade release lever, install the new cleaning blade between the blade bracket [C] and the blade scraper.

NOTE: a) Do not touch the edge of a new cleaning blade, as it is damaged easily.

b) After installing a new cleaning blade, make sure that the blade swivels smoothly.

4.3 CLEANING BRUSH REPLACEMENT



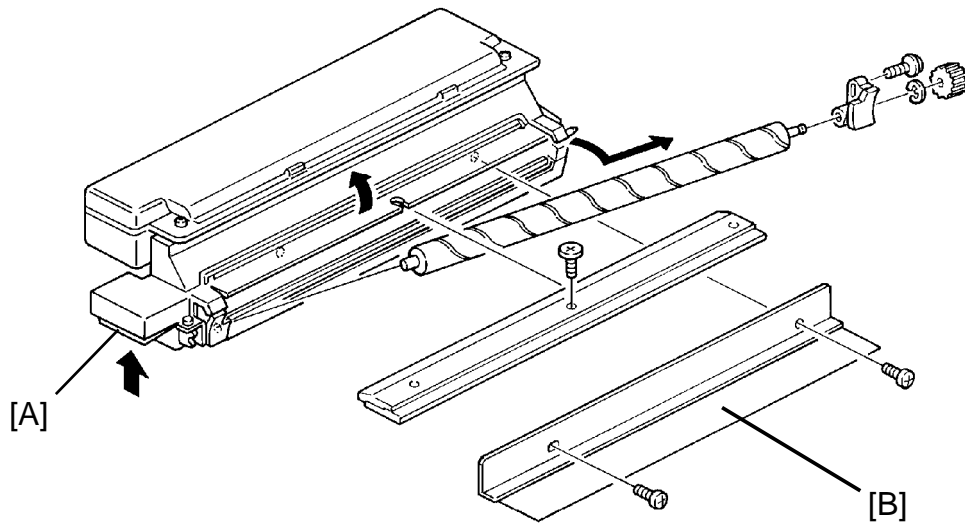
1. Remove the cleaning blade [A]. (See Cleaning Blade Replacement.)
2. Remove the screw of the rear cleaning side bracket [C] and pull out the cleaning brush [B] together with the cleaning side bracket (1 E-ring) and gear [D].
3. Remove the gear and the rear cleaning side bracket, and replace the cleaning brush.

NOTE: a) Do not touch the cleaning brush surface. Handle only the shaft-ends.

b) Do not bend or damage the entrance seal.

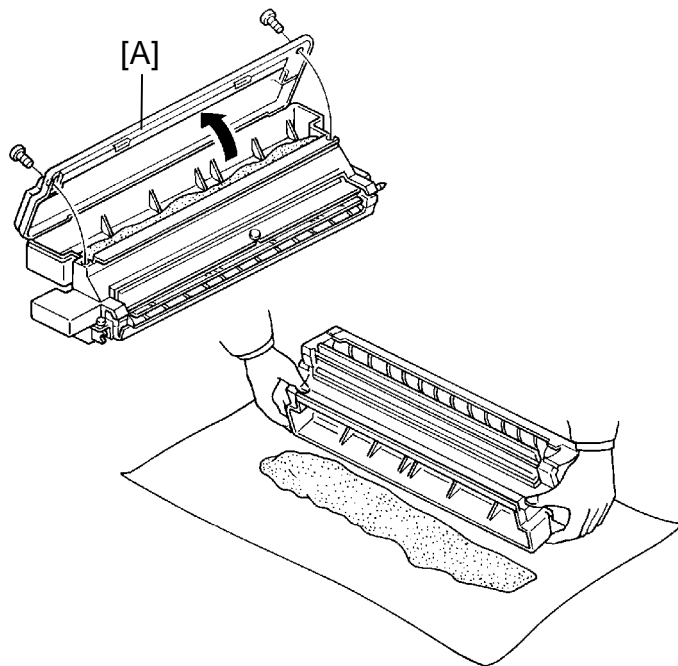
c) This screw [E] is a tapping screw. Do not tighten it too much as this will strip the resin threads.

4.4 BLADE SCRAPER REPLACEMENT



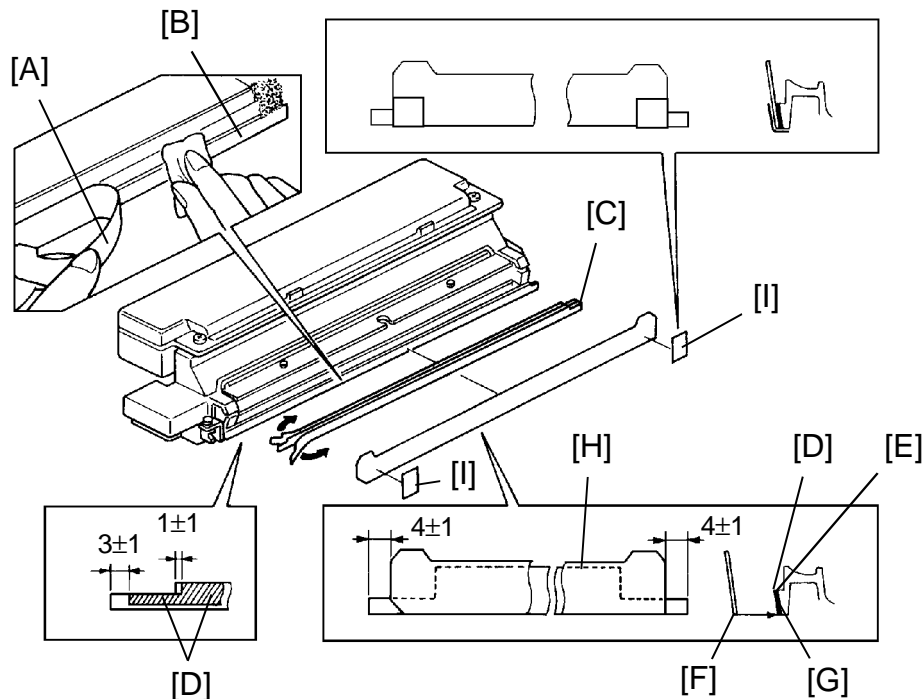
1. Remove the cleaning blade and brush. (See Cleaning Blade and Brush Replacement.)
2. While holding up the cleaning blade release lever [A], remove the blade scraper [B] (2 screws).

4.5 USED TONER COLLECTION (SP83)



1. Turn off the main switch.
2. Remove the cleaning unit.
3. Set the cleaning unit on a large sheet of paper.
4. Remove the used toner tank cover [A] (2 screws).
5. Pour the used toner slowly onto the paper sheet so that the toner does not scatter.
6. Place the paper sheet with the toner into a vinyl bag.
NOTE: Dispose according to local regulations.
7. Reinstall the used toner tank cover.
8. Reinstall the cleaning unit.
9. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.
10. Enter "83" using the number keys and press the enter key.
11. Enter "1" using the number keys and press the enter key.
12. Turn the main switch off.

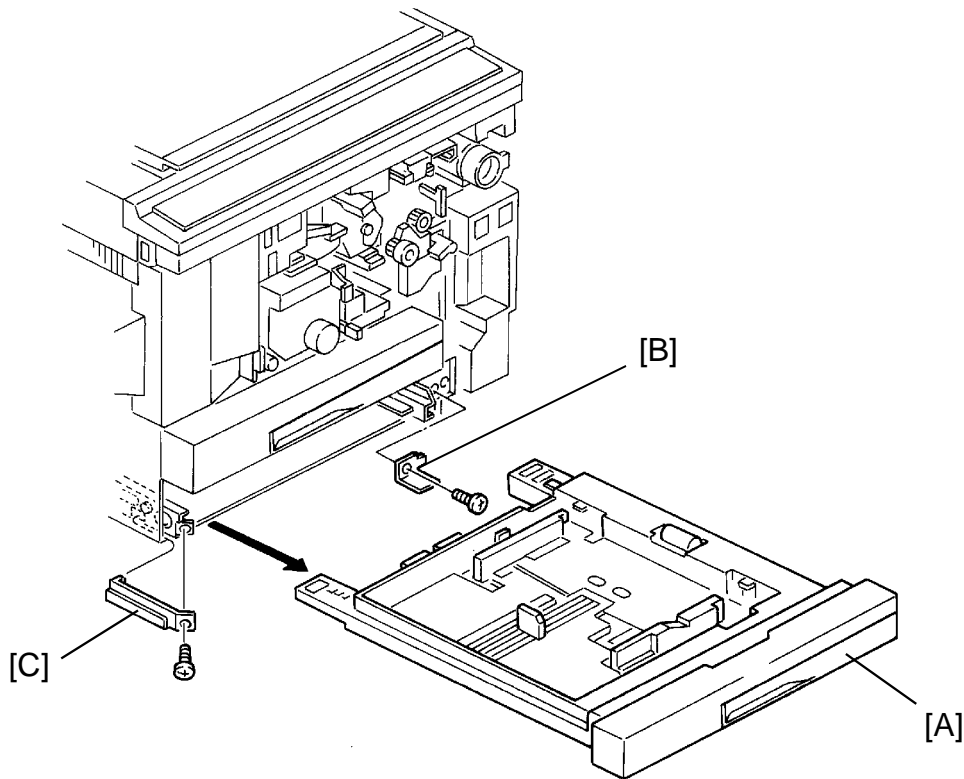
4.6 ENTRANCE SEAL REPLACEMENT



1. Remove the cleaning unit and the following parts:
Cleaning Blade
Cleaning Brush
2. Remove the used toner. (See Used Toner Collection.)
3. Clean the cleaning unit with a vacuum cleaner.
4. Remove the entrance seal [A] together with the strip of 2 sided tape securing it to the lower casing.
5. Clean the lower casing [B] with alcohol: make sure that no tape remains on the casing surface.
6. Place a new strip of 2-sided tape [C] on the lower casing surface. The upper edge [D] of the tape must be flush with the edge [E] of the projection as shown in the illustration.
7. Place the new entrance seal on the 2-sided tape as shown in the illustration.
NOTE: a) The lower edge [F] of the entrance seal must be aligned with the edge [G] of the lower casing.
b) Make sure that there are no waves in the upper edge [H] of the entrance seal.
8. Place the new seal [I] on the entrance seal.

5. PAPER FEED

5.1 PAPER TRAY REMOVAL



1. Open the copier front door.
2. Pull out the paper tray [A] and remove the tray stopper brackets [B], [C] on both sides as shown (1 screw each) and then remove the paper tray from the copier.

NOTE: When removing several paper trays at a time, make sure that the paper tray is returned to the original feeding station. To identify the original feeding station, each paper tray has its own decal on the right side.

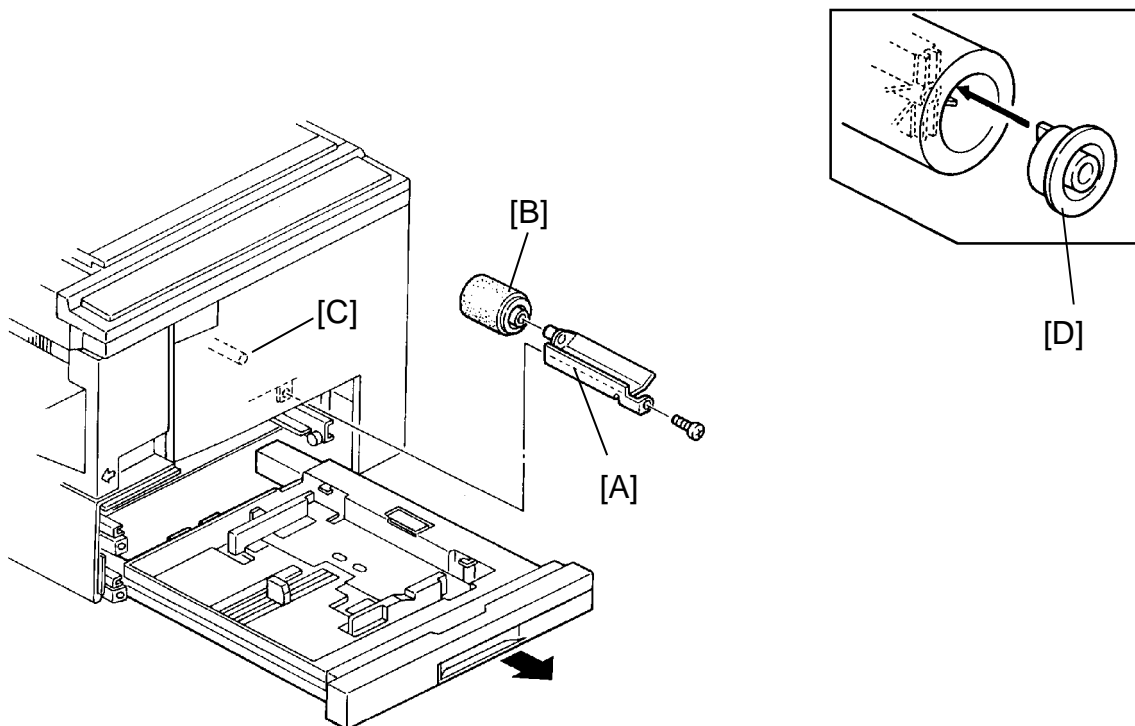
(A: Copier Upper Paper Tray)
(B: Copier Lower Paper Tray)
(C: Paper Tray Unit - Tray 1)
(D: Paper Tray Unit - Tray 2)
(E: Paper Tray Unit - Tray 3)

5.2 PAPER FEED ROLLER REPLACEMENT

5.2.1 Friction Pad Feed System (Paper Tray)

NOTE: Replace the paper feed roller and the friction pad assembly as a set to maintain paper feeding ability.

(1) Feed Roller Replacement

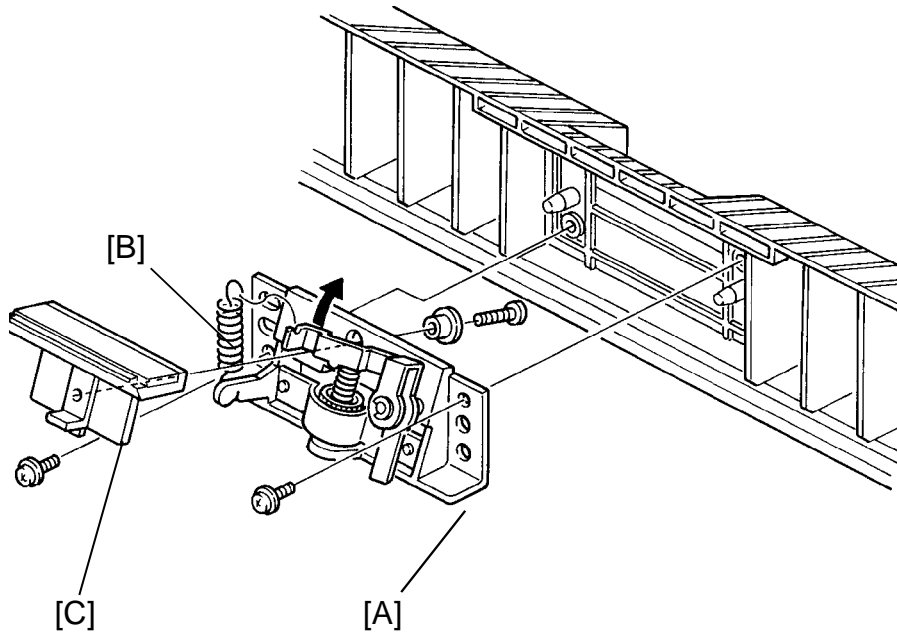
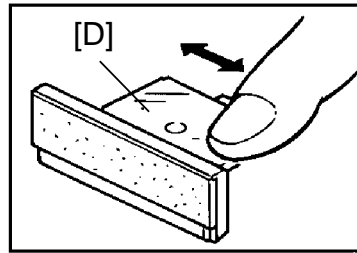


1. Remove the paper tray (see Paper Tray Removal).
2. Remove the feed roller guide [A] (1 screw).
3. Remove the feed roller assembly [B] from the shaft [C].
4. Replace the feed roller hub [D] from the old to the new feed roller.

NOTE: When replacing the feed roller hub, make sure that the projections of the hub engage with the grooves of the feed roller.

5. Reassemble the copier.

(2) Friction Pad Replacement



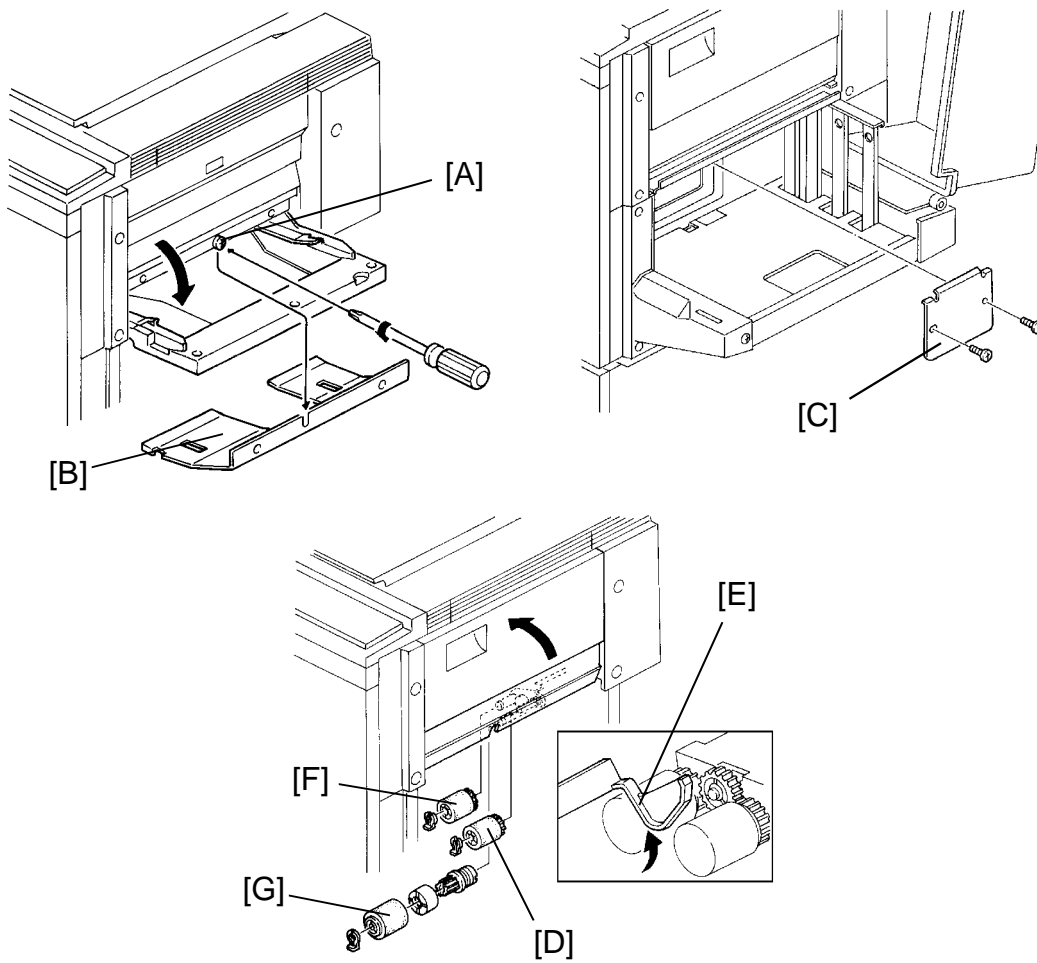
1. Pull out the paper tray.
2. Remove the friction pad holder mounting bracket [A] from the paper tray (2 screws with washers).
3. Unhook the spring [B] from the pressure release lever.
4. Remove the friction pad assembly [C] from the mounting bracket (1 screw and 1 swivel bushing).
5. Lubricate the sliding surface [D] of the new friction pad assembly slightly with "Albania 2" grease.
6. Install the new friction pad assembly on the mounting bracket and reassemble the paper tray.

NOTE: If the friction pad assembly is replaced for several paper trays at the same time, make sure that the friction pad holder mounting bracket is placed back to the original paper tray.

To identify the original position, the mounting bracket and the paper tray have the identical decals such as "A", "B",

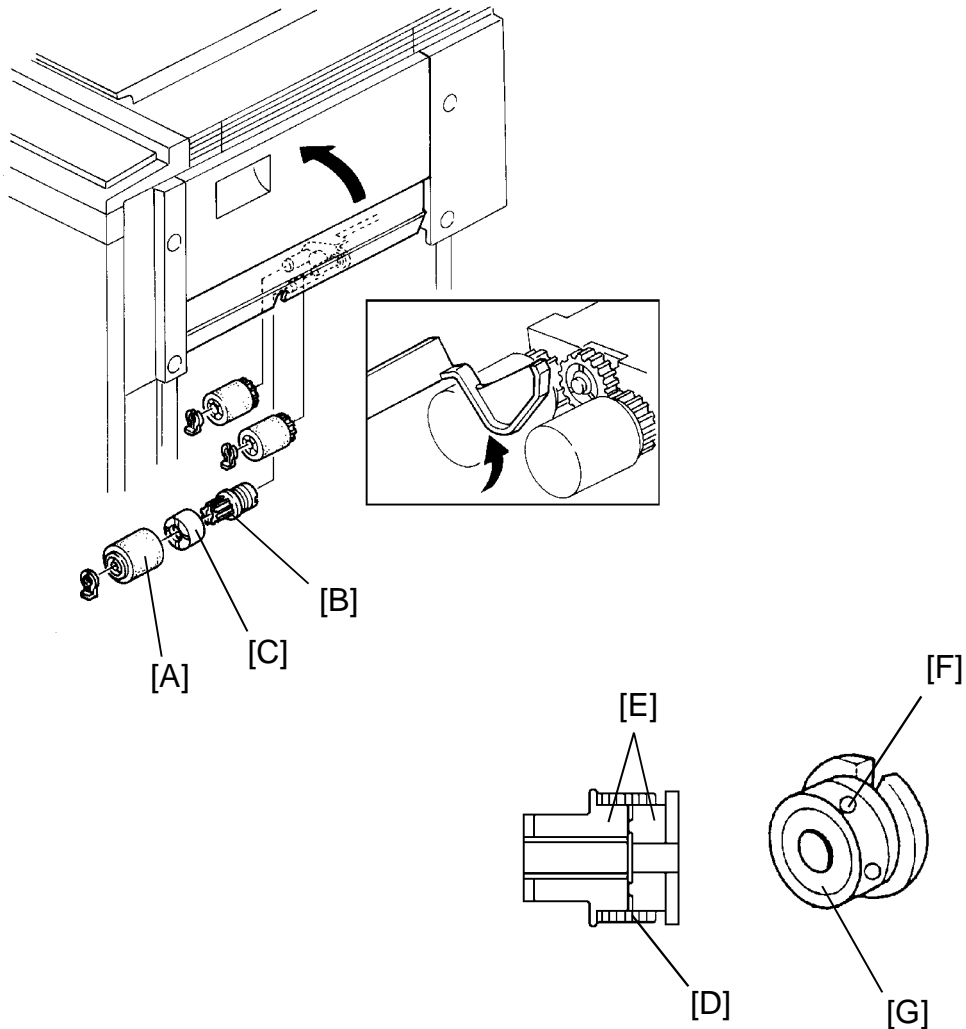
5.2.2 FRR-Feed System (Manual Feed/Large Capacity Tray)

(1) Pick-up, Paper Feed, and Separation Rollers Replacement



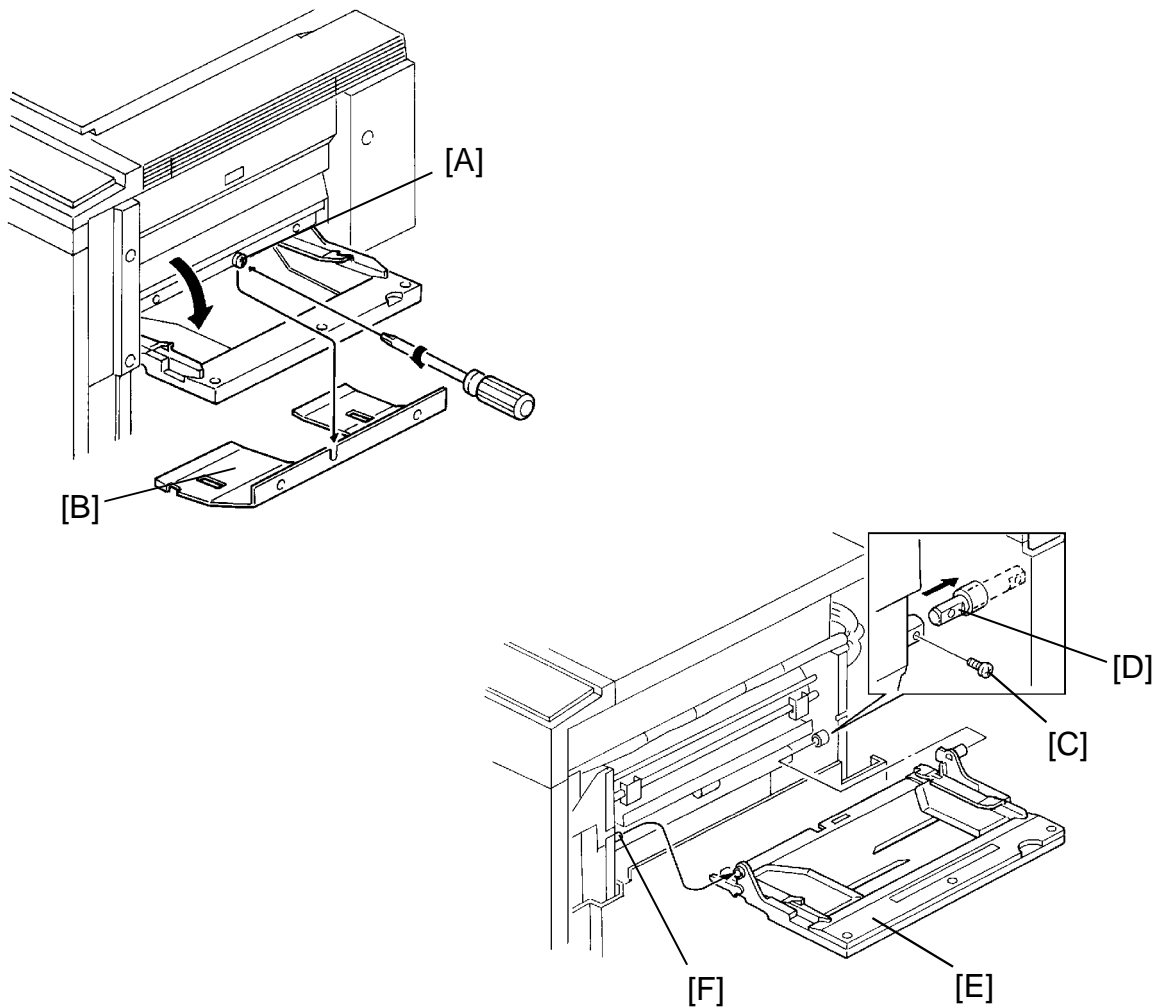
1. Open the by-pass feed table.
2. Loosen the screw [A] and remove the by-pass feed guide plate [B] while lifting the by-pass feed table a little.
3. Close the by-pass feed table.
4. Non-LCT machine:
Remove the right lower cover (4 screws).
LCT machine:
Lower the LCT bottom plate and remove the paper stack.
Open the LCT top cover and remove the LCT cover plate [C](2 screws).
5. Remove the pick-up roller [D] (1 snap ring).
6. While lifting up the paper end feeler [E], remove the paper feed roller [F] (1 snap ring).
7. Remove the separation roller [G] (1 snap ring).

(2) Separation Clutch Lubrication



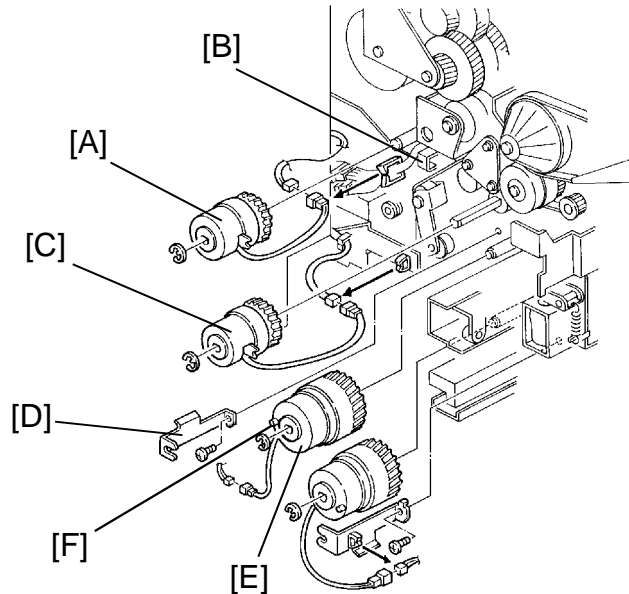
1. Remove the separation roller [A] (see Separation Roller Replacement).
2. Slide the slip clutch [B] with the clutch cover [C] off the shaft.
3. Separate the slip clutch into the three components.
4. Clean the clutch spring [D] and the clutch hubs [E].
5. Put Mobil Temp. 78 in the three grease holes [F] of the drive hub [G] and the inner surface of the spring.

5.3 BY-PASS FEED TABLE REMOVAL



1. Open the by-pass feed table.
2. Loosen the screw [A] and remove the by-pass feed guide plate [B] while lifting the by-pass feed table a little.
3. Remove the right upper cover and the rear cover.
4. Remove the fixing screw [C] for the by-pass feed rear support pin [D].
5. While sliding the by-pass feed rear support pin to the rear, slide the by-pass feed table [E] off the by-pass feed front support pin [F].

5.4 PAPER FEED CLUTCHES REPLACEMENT



< Common Procedure >

1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Swing out the main control board assembly (1 screw).

(1) By-pass Feed Clutch

1. Remove the by-pass feed clutch [A] (1 E-ring, 1 connector, and 1 wire saddle).

NOTE: When reinstalling the clutch, make sure that the clutch stopper groove engages with the stopper bracket [B].

(2) Relay Feed Clutch

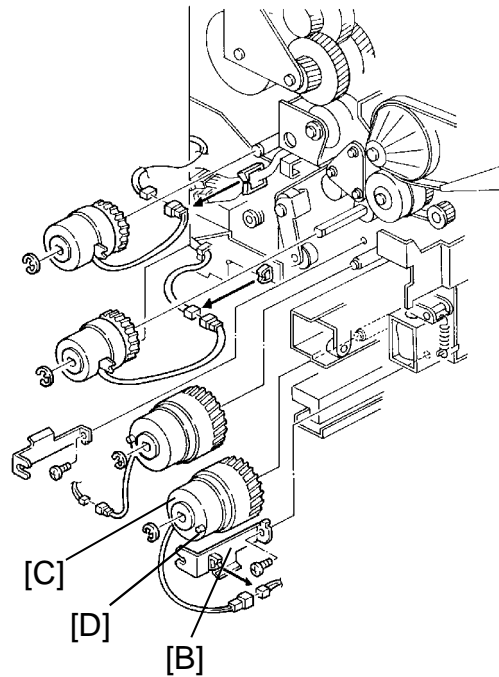
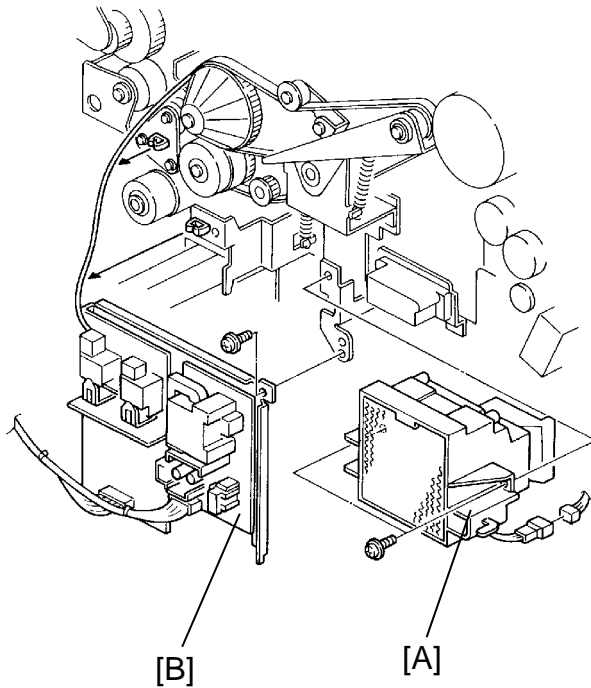
1. Remove the relay feed clutch [C] (1 E-ring, 1 connector, and 1 wire saddle).

NOTE: When reinstalling the clutch, make sure that the clutch stopper groove engages with the stopper bracket [D].

(3) Upper Paper Feed Clutch

1. Remove the stopper bracket [D] (1 screw).
2. Remove the upper paper feed clutch [E] (1 E-ring, 1 connector, and 1 wire saddle).

NOTE: When reinstalling the clutch, make sure that the clutch stopper pin [F] engages with the groove of the stopper bracket.

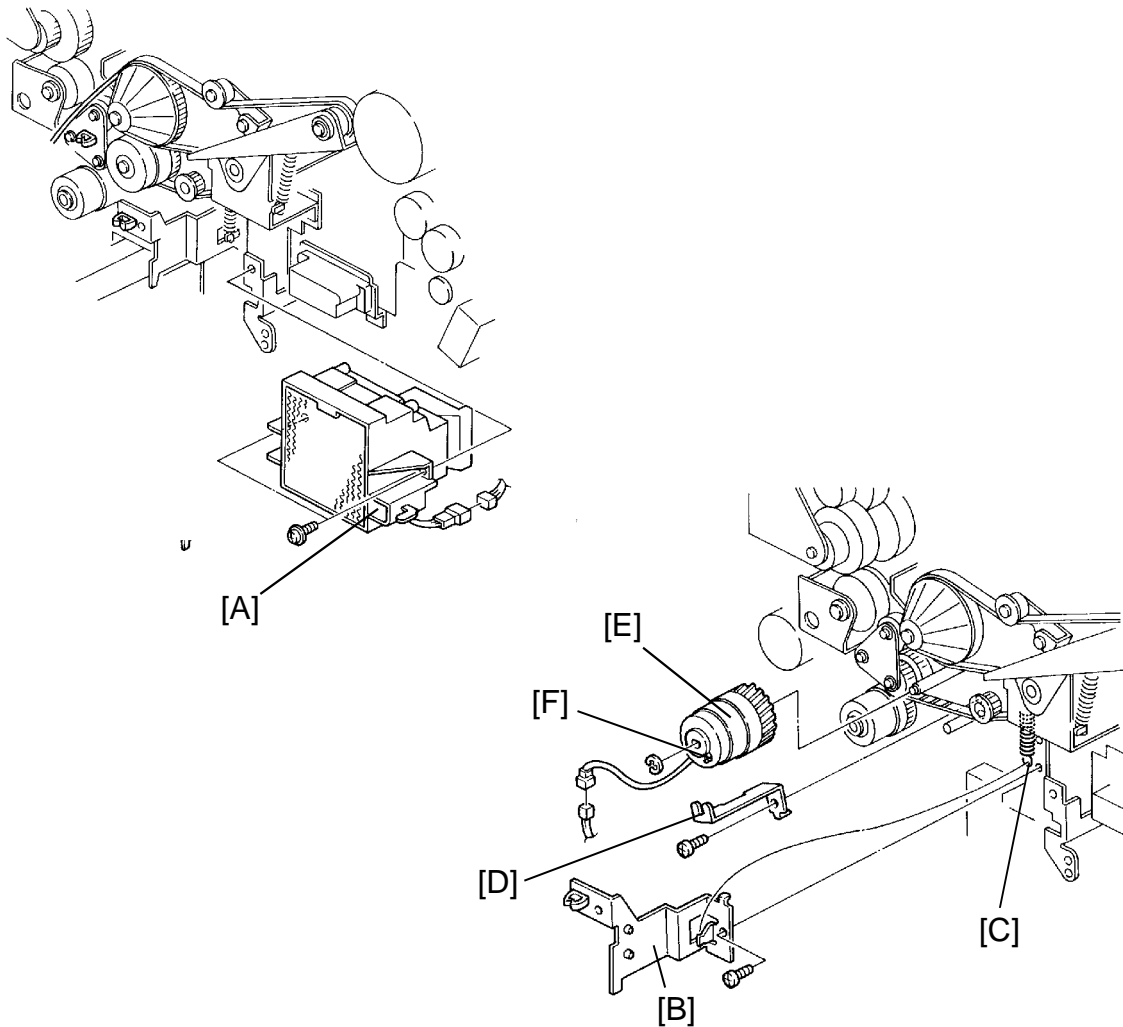


(4) Lower Paper Feed Clutch

1. Take the high voltage cables off the hooks on the exhaust blower housing.
2. Remove the exhaust blower assembly [A] (2 screws and 1 connector).
3. Move the high voltage supply board assembly [B] from the copier base plate (1 screw, 2 wire saddles for bias cable).
4. Remove the stopper bracket [B] (1 screw).
5. Remove the lower paper feed clutch [C] (1 E-ring, 1 connector, 1 wire saddle).

NOTE: When reinstalling the clutch, make sure that the clutch stopper pin [D] engages with the groove of the stopper bracket.

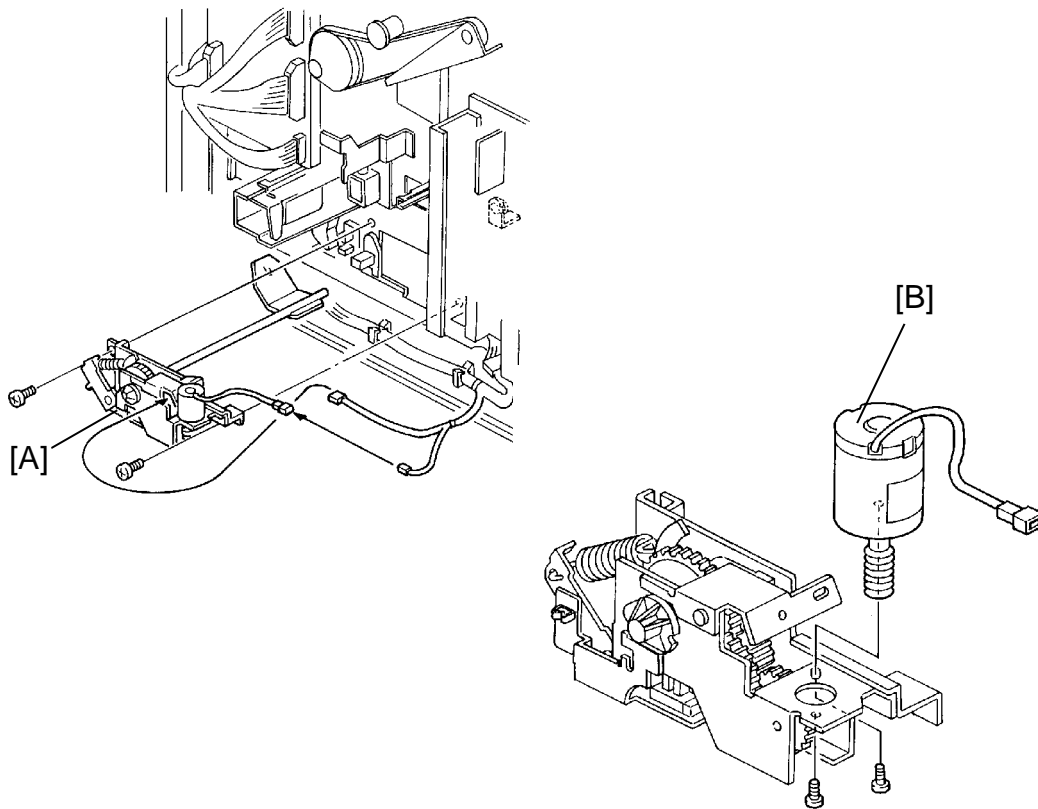
5.5 REGISTRATION CLUTCH REPLACEMENT



1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Take the high voltage cables off the hooks on the exhaust blower housing.
4. Remove the exhaust blower assembly [A] (2 screws and 1 connector).
5. Remove the exhaust blower bracket [B] (1 spring [C] and 1 screw).
6. Remove the stopper bracket [D] (1 screw).
7. Remove the registration clutch [E] (1 E-ring, 1 connector, 1 wire saddle).

NOTE: When reinstalling the clutch, make sure that the clutch stopper pin [F] engages with the groove of the stopper bracket.

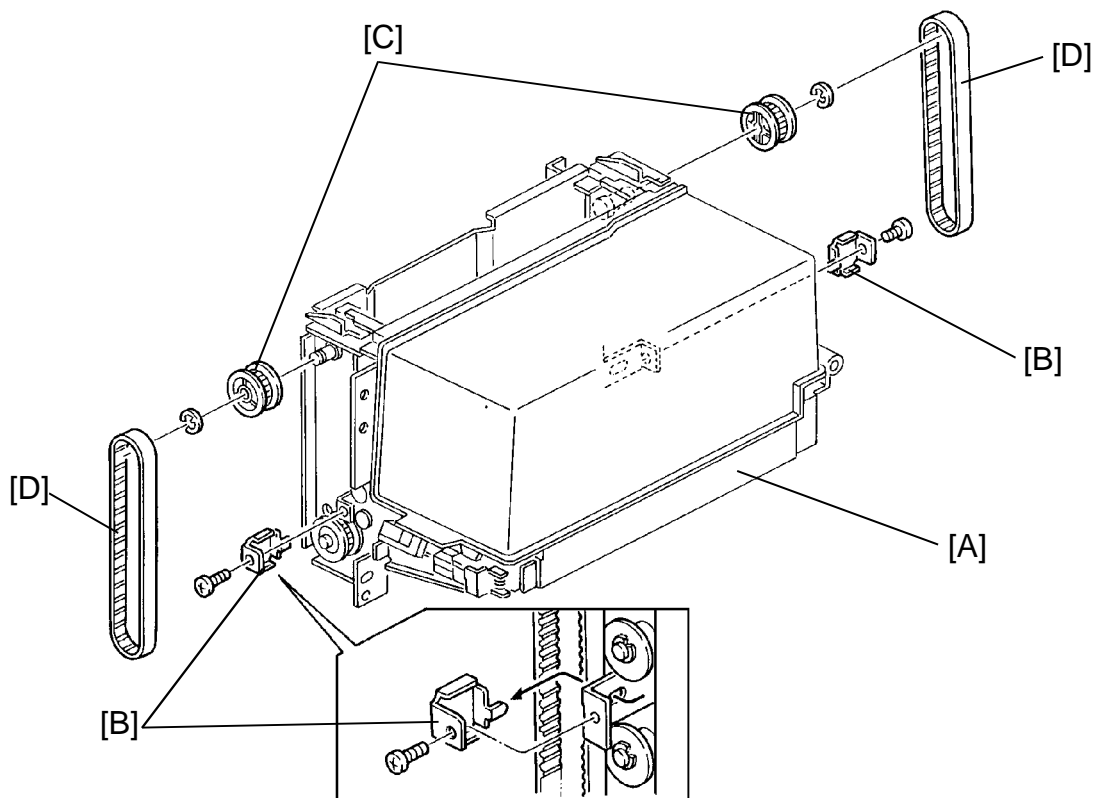
5.6 TRAY LIFT MOTOR/TRAY REPLACEMENT



<Lower paper tray for example>

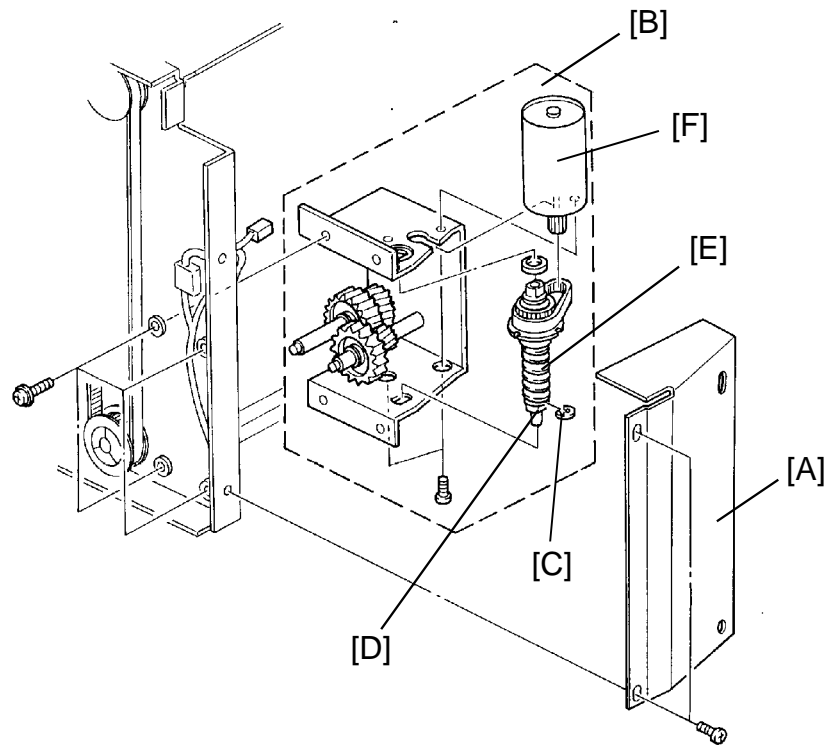
1. Turn off the main switch and unplug the power cord.
2. Remove the lower tray from the copier. (see paper tray removal)
3. Remove the rear cover and swing out the main control board and the dc power supply board assemblies (1 screw each).
4. Take the high voltage cables off the hooks on the exhaust blower housing.
5. Remove the exhaust blower assembly (2 screws and 1 connector).
6. Remove the high voltage supply board assembly from the copier base plate (1 screw, 3 wire saddles, 6 connectors).
7. Pull out the paper lift motor assembly [A] from the copier (2 screws, 3 connectors, 3 wire saddles).
8. Remove the tray lift motor [B] (2 screws).

5.7 LCT DRIVE BELT REPLACEMENT



1. Remove the right upper cover.
2. Remove the LCT front and rear covers (1 screw each).
3. Remove the right front lower and right rear lower covers (2 screws each).
4. Remove the LCT [A] from the copier (4 screws and 3 connectors).
5. Remove the belt stoppers [B] (1 screw).
6. Remove the pulley [C] (1 retaining ring).
7. Replace the LCT drive belt [D].

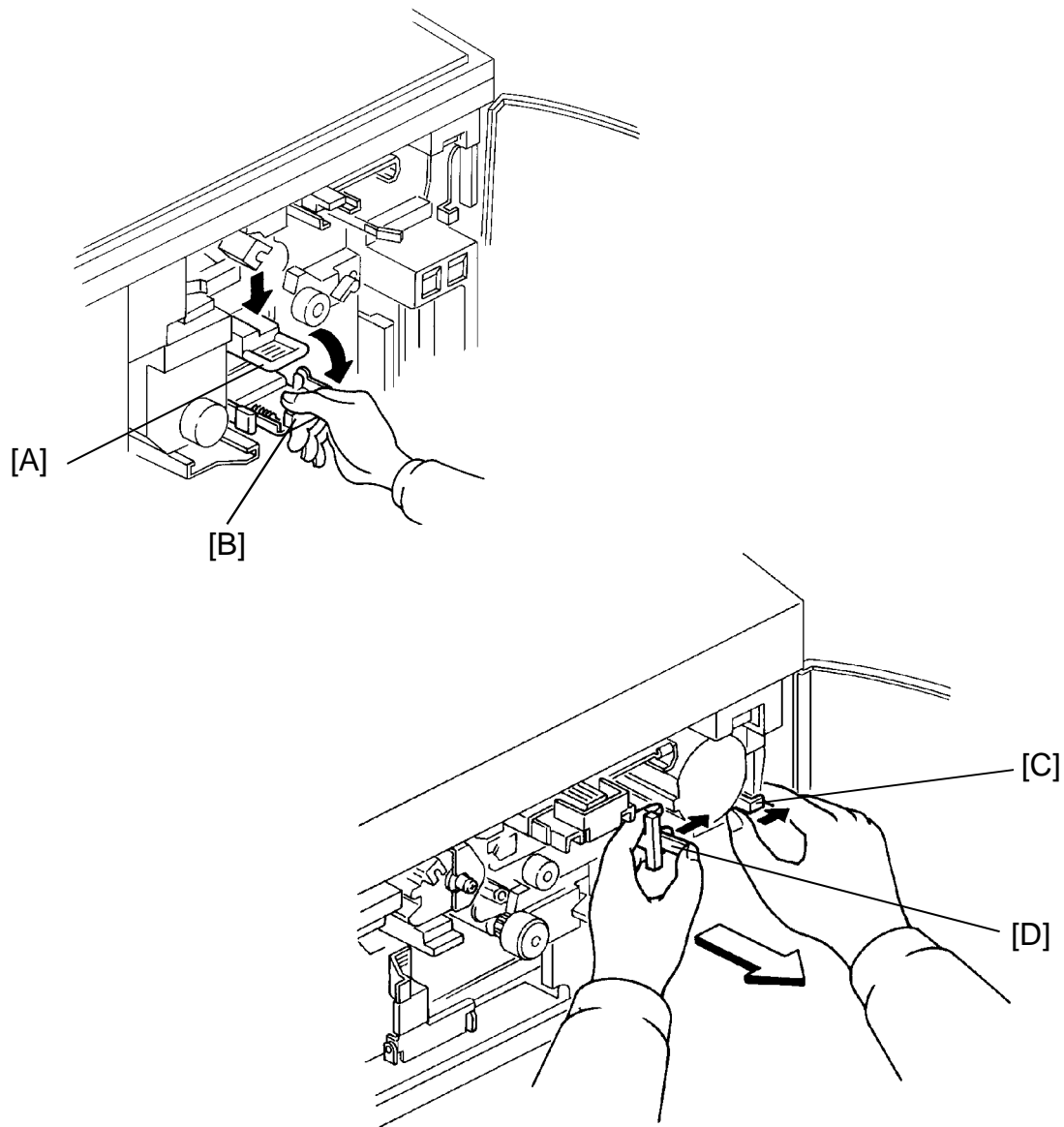
5.8 LCT LIFT MOTOR REPLACEMENT



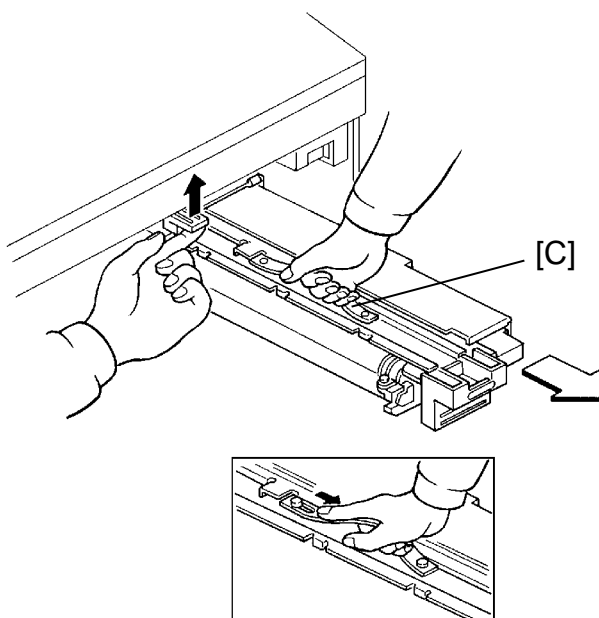
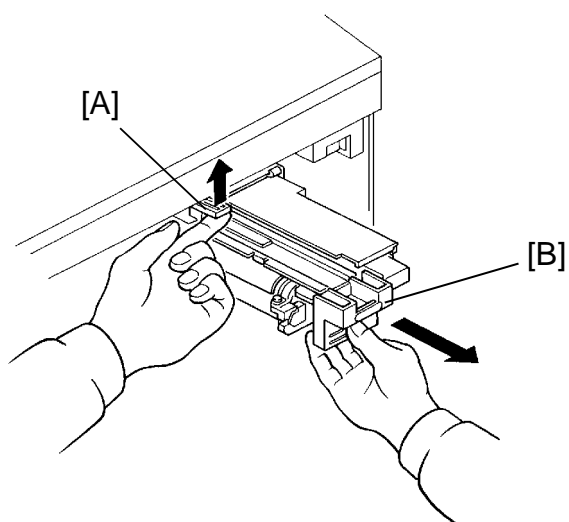
1. Remove the LCT from the copier (refer to LCT Drive Belt Replacement).
2. Remove the motor cover plate [A] (2 screws).
3. Remove the LCT lift motor assembly [B] (4 screws, 4 rubber rings, 1 connector).
4. Remove the E-ring [C] from the worm gear shaft.
5. Slide the bushing [D] inwards and remove the worm gear assembly [E].
6. Remove the LCT lift motor [F] (2 screws).

6. AROUND THE DRUM

6.1 DRUM UNIT REMOVAL

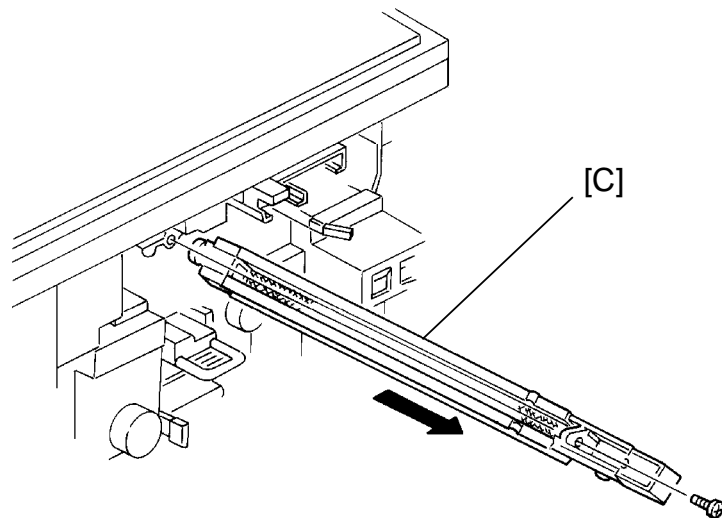
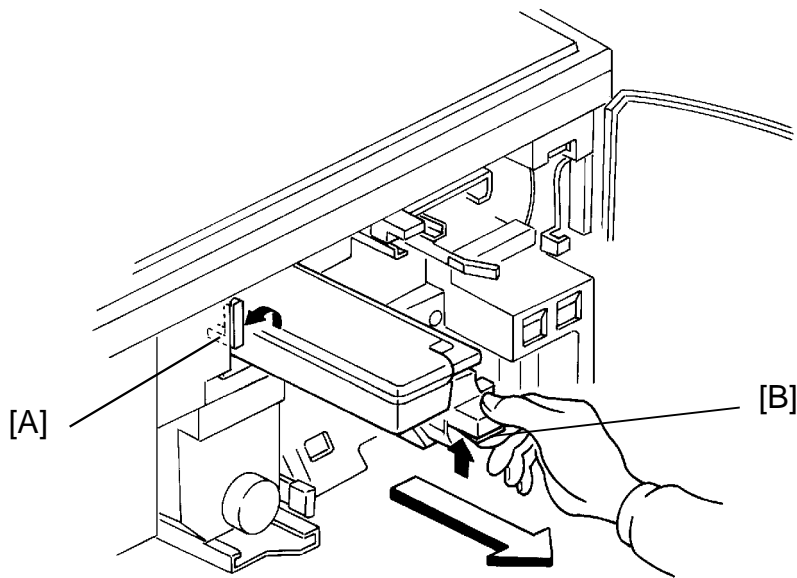


1. Open the front door and lower the transfer & separation corona unit [A] by pulling down the release lever [B].
2. Push the development unit lock lever [C] to the right (to the lock position).
3. Move the development release lever [D] to the right and pull the black development unit half way out. Holding the toner supply unit with your right hand and the bottom of the development unit with your left hand, pull the unit all the way out. Place the unit on a clean sheet of paper.

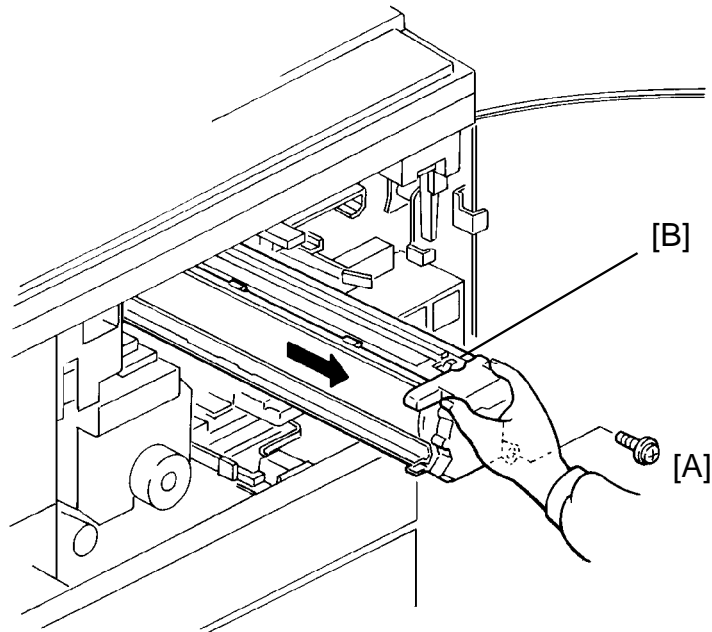


4. If the color development unit (option) is installed, continue the following:

- (1) While lifting the color development unit lock lever [A], pull the color development unit [B] until it locks.
- (2) Hold the belt [C] of the unit and pull out the unit while lifting the lock lever again.
- (3) Place the unit on a clean sheet of paper.

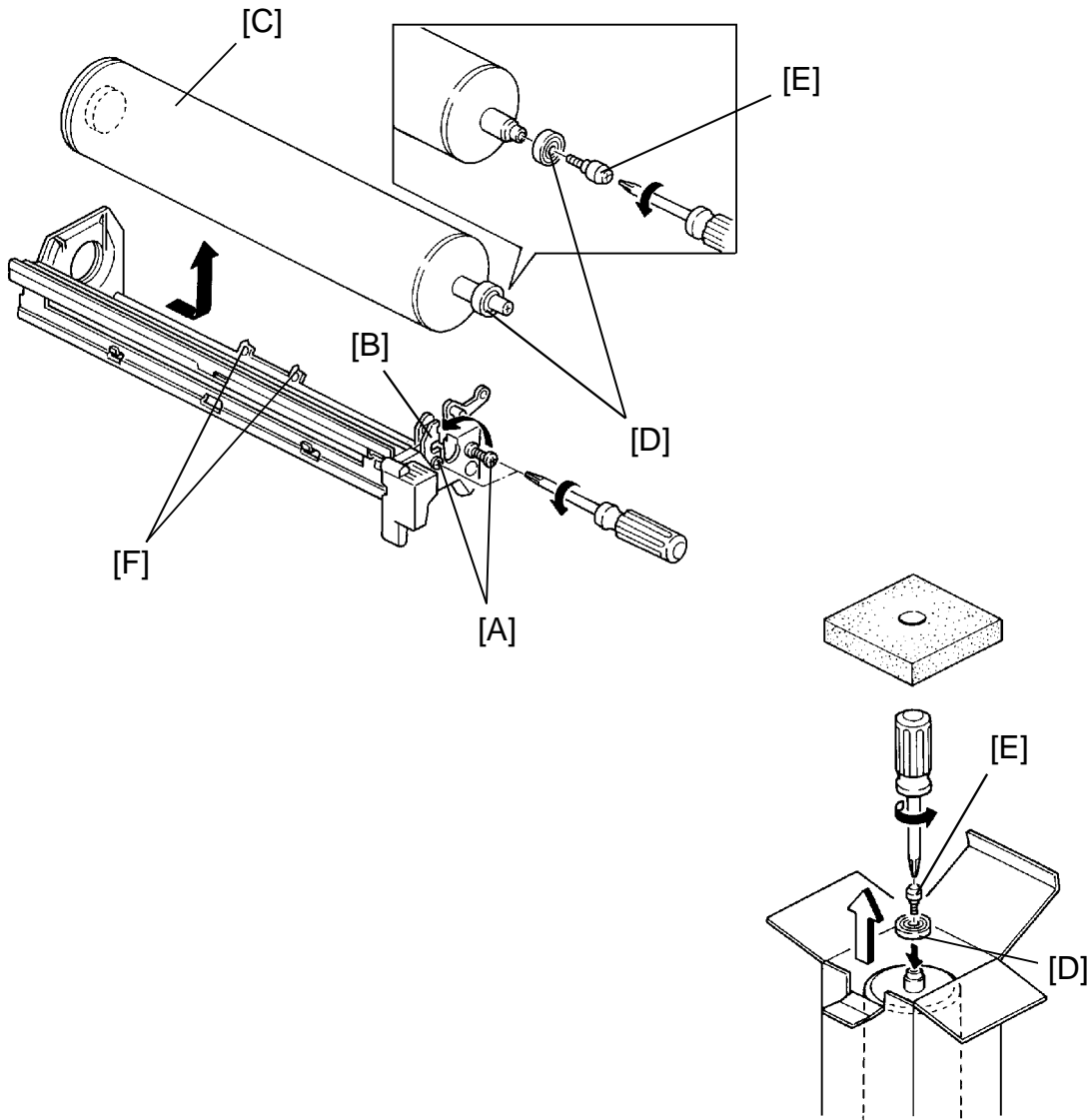


5. Turn the cleaning unit release lever [A] counterclockwise. While holding up the cleaning blade release lever [B], remove the cleaning unit. Place the unit on a clean sheet of paper.
6. Remove the charge corona unit [C] together with the wire cleaner (1 screw).



7. Remove the fixing screw [A] securing the drum stay and pull out the drum unit [B] gently along the rail.
8. Place the drum unit on a clean sheet of paper.

6.2 DRUM REPLACEMENT



1. Pull out the drum unit from the copier and place it with the left side down on a clean sheet of paper (see Drum Unit Removal).
2. Loosen the two screws [A] securing the bearing holder [B] and rotate the holder as shown.
3. While holding the front side of the drum unit, push the rear end of the drum [C] towards the front to loosen the bearing [D].
4. While holding the front and rear ends of the drum, remove the drum from the drum unit by lifting it up.
5. Remove the bearing and the bearing screw [E] from the old drum and install them on a new drum.

NOTE: Keep the drum protective sheet on the new drum.

6. Clean the ID sensor and the V sensor with a blower brush (see ID sensor Cleaning and Replacement, V sensor cleaning and Replacement).
7. Clean the toner shield glass and the green filter (see Toner Shield Glass Cleaning and Replacement).

8. Install the new drum in the drum unit, then position and secure the bearing holder.

NOTE: a) When setting the drum in the unit, be careful not to strike it against the unit frame or the pick-off pawls [F].

- b) Do not bend the bearing holder. Make sure that the bearing holder is in contact with the bearing, as they are both used to ground the drum. If they are not in contact, solid black copies may appear.

9. Install the drum unit in the copier and remove the drum protective sheet.

NOTE: Be sure that the drum unit is secured with the screw.

10. Install the other remaining units in the copier.

11. Clean the optics and plug in the copier.

12. While pressing both "1" and "3" of the number keys, turn on the main switch to enter the SP mode.

NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.

13. Enter "66" using the number keys and press the enter key. Press "1", then the enter key. (The copier performs the drum initial setting and the beeper sounds 5 times.)

14. Enter "54" using the number keys and press the enter key, then the start key. (The copier performs ID/V sensor adjustments and the beeper sounds 2 times after 4 seconds.)

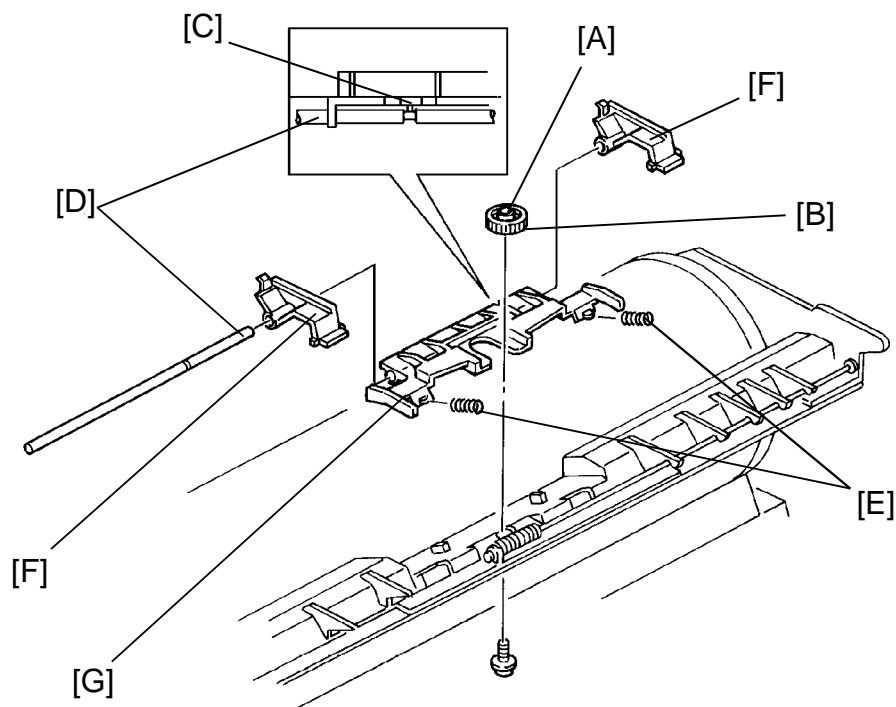
15. Enter "48" using the number keys and then press the enter key twice.

16. Make copies from the test chart at the ID level #4 and adjust the exposure lamp voltage if necessary (see Light Intensity Adjustment).

17. Enter "56" using the number keys and press the start key. The ADS gain data is displayed in the three digit counter. When the beeper sounds two times (about 4 seconds) the adjustment is complete.

18. Turn the main switch off and on.

6.3 PICK-OFF PAWL REPLACEMENT



CAUTION: Be careful not to injure your hands with the pick-off paws as the top of them is very sharp.

1. Remove the drum from the drum unit (see Drum Replacement) and keep the drum wrapped in the protective sheet or a clean sheet of paper.
2. Remove the cam gear shaft [A] (1 screw) and the cam gear [B].
3. While turning the pick-off pawl assembly towards the drum side, slide it to the rear. Lifting the front side of the assembly, remove it from the drum unit.
4. While releasing the shaft stopper [C], pull out the pick-off pawl shaft [D] from the assembly.

NOTE: Be careful not to lose the pick-off pawl springs [E].

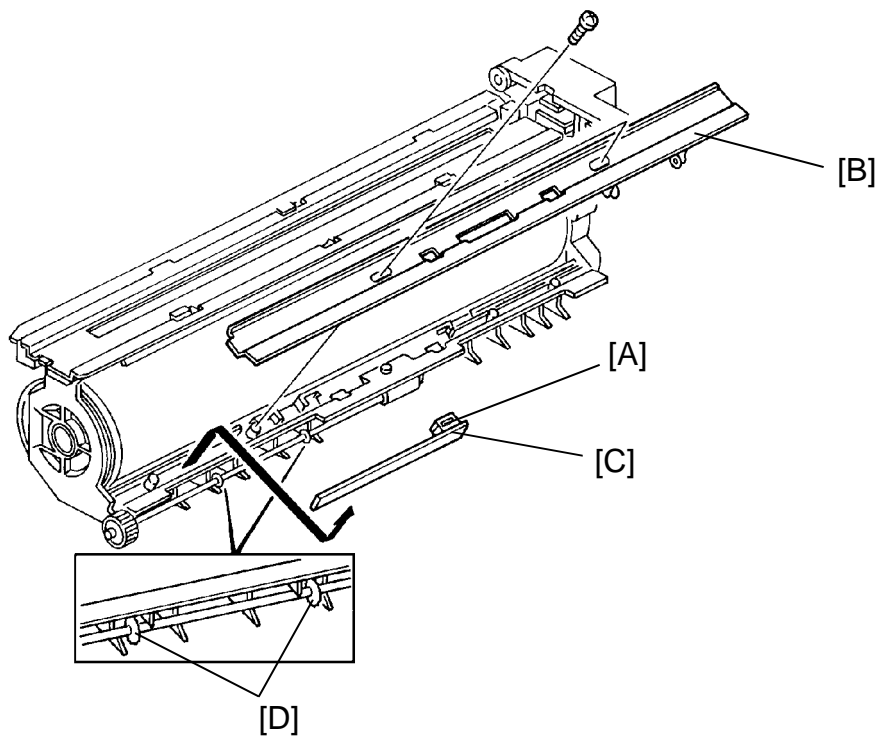
5. Install the new pick-off paws [F] on the pick-off pawl holder and set the pick-off pawl springs.

NOTE: a) Make sure that the pick-off paws are positioned correctly on the pick-off pawl holder [G].

b) Make sure that the pick-off pawl shaft is locked by the shaft stopper.

6. Reassemble the drum unit.

6.4 ID SENSOR CLEANING AND REPLACEMENT



1. Remove the drum from the drum unit (see Drum Replacement) and keep the drum wrapped in the protective sheet or a clean sheet of paper.

[Cleaning]

2. Clean the ID sensor [A] with a blower brush from the drum side.

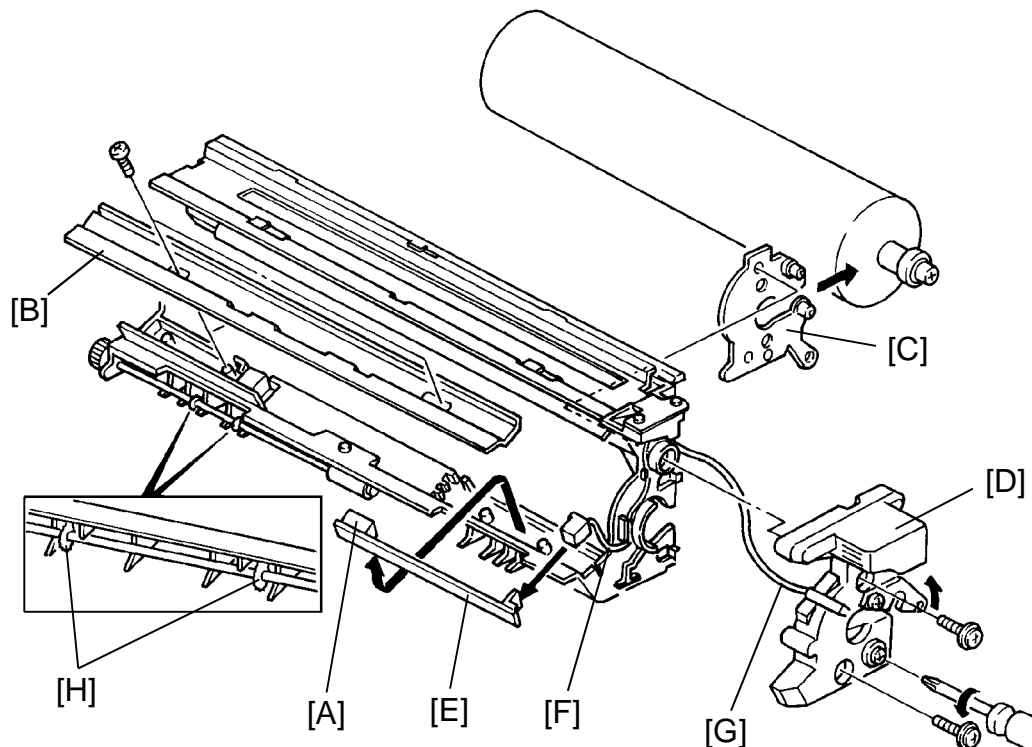
[Replacement]

2. Remove the ID/V sensor bracket [B] from the drum unit (2 screws).
3. Remove the ID sensor board [C] from the drum unit by simply lifting it up.
4. Reassemble the drum unit and install all the removed units in the copier.

NOTE: When reinstalling the ID/V sensor bracket, make sure that the spurs [D] are correctly positioned as shown.

5. Perform the ID/V sensor adjustment (see ID Sensor and V Sensor Adjustment SP54).

6.5 V SENSOR CLEANING AND REPLACEMENT



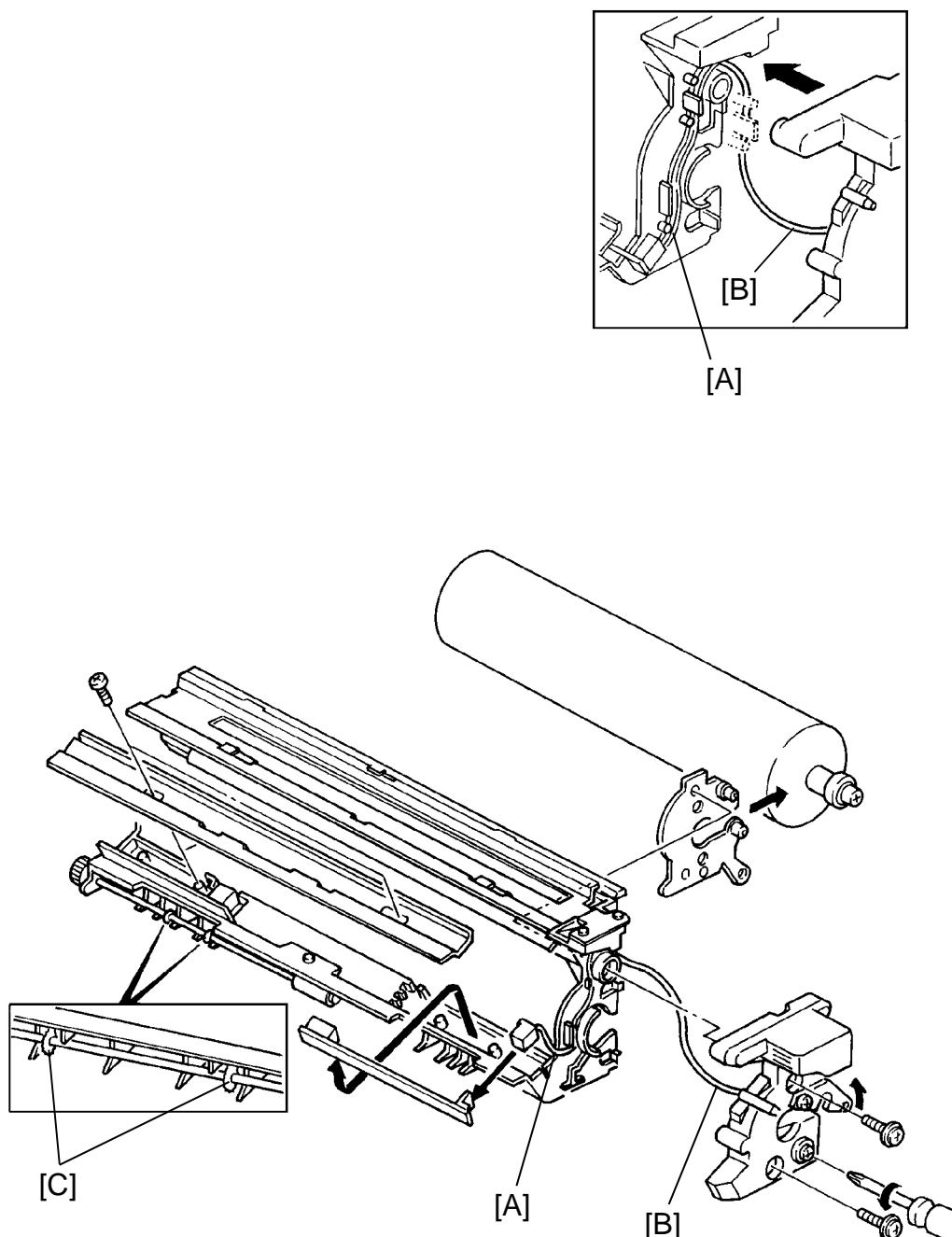
1. Remove the drum from the drum unit (see Drum Replacement) and keep the drum wrapped in the protective sheet or a clean sheet of paper.

[Cleaning]

2. Clean the V sensor [A] with a blower brush from the drum side.

[Replacement]

2. Remove the ID/V sensor bracket [B] from the drum unit (2 screws).
3. Remove the drum stay [C] (2 long screws) from the drum unit.
4. Remove the front drum cover [D] from the unit.
5. Remove the V sensor board [E] from the drum unit (1 connector).
6. Couple the V sensor connector with a new V sensor board and install the board on the drum unit.



7. Run the V sensor harness [A] and the drum grounding wire [B] on the drum unit frame as shown and install the front drum cover.

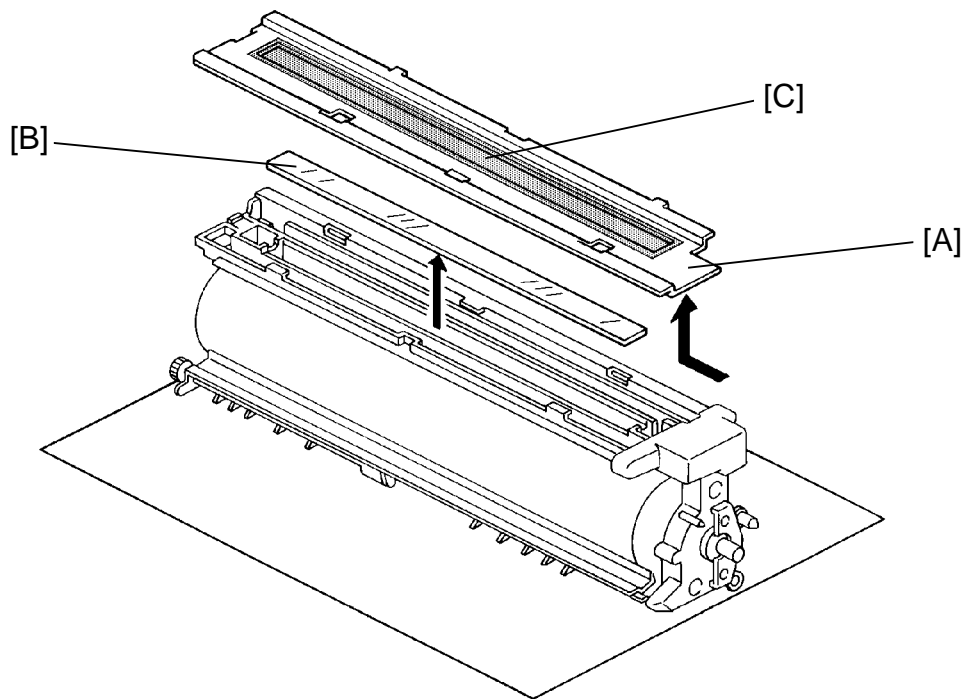
NOTE: Make sure that the harnesses are correctly positioned and that no wire is nicked or pinched by the drum front cover.

8. Reassemble the drum unit and install all the removed units in the copier.

NOTE: When reinstalling the ID/V sensor bracket, make sure that the spurs [C] are correctly positioned as shown.

9. Perform the ID/V sensor adjustment (see ID Sensor and V Sensor Adjustment SP54).

6.6 TONER SHIELD GLASS AND GREEN FILTER CLEANING



1. Remove the drum unit from the copier (see Drum Unit Removal) and place it on a clean sheet of paper with the drum unit top plate up [A].
2. While holding the front side of the drum unit, slide the drum unit top plate to the rear and remove.
3. While holding both the front and rear ends of the toner shield glass [B] with your fingers, lift the glass up.
4. Clean the toner shield glass and the green filter [C] on the drum unit top plate with a dry cloth.

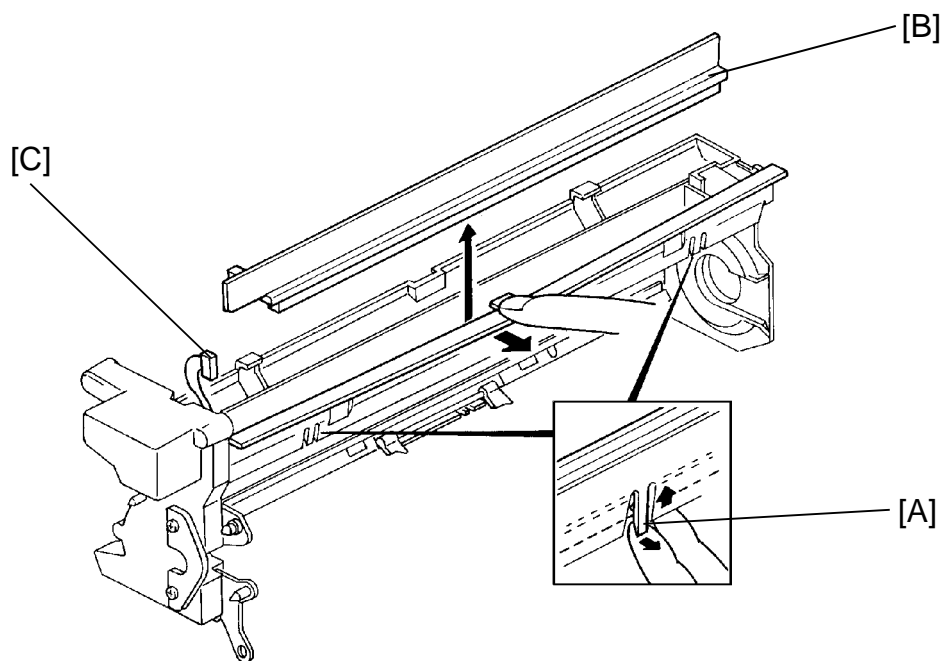
NOTE: a) After cleaning the green filter, discharge static electricity on the filter by touching it with your finger.

b) Do not clean the green filter with water or any other cleaning solution as the filter has an antistatic coating.

5. Reassemble the drum unit.

NOTE: When reinstalling the drum unit top plate, be careful not to nick or pinch the erase lamp unit harness.

6.7 ERASE LAMP UNIT REPLACEMENT



1. Remove the drum and the toner shield glass from the drum unit (see Drum Replacement and Toner Shield Glass Cleaning).
2. While unhooking the positioning pawls [A], remove the erase lamp unit [B] (1 connector) as shown.
3. Couple the erase lamp connector [C] with a new erase lamp unit and install the unit in the drum unit.

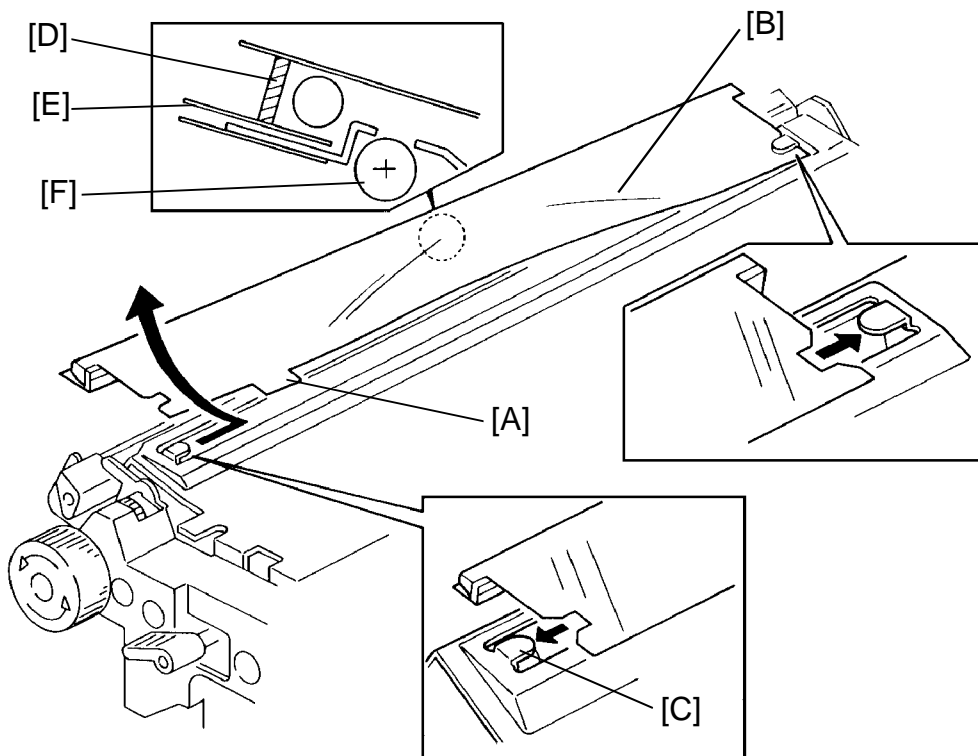
NOTE: Make sure that the erase lamp unit is hooked correctly with positioning pawls and the harness is set in position.

4. Reassemble the drum unit.

NOTE: When reinstalling the drum unit top plate, be careful not to nick or pinch the erase lamp unit harness.

5. If you have replaced the erase lamp unit with a different type (standard type and edit type), set SP84 (Editing Eraser) to correct the setting for the type of lamp installed.

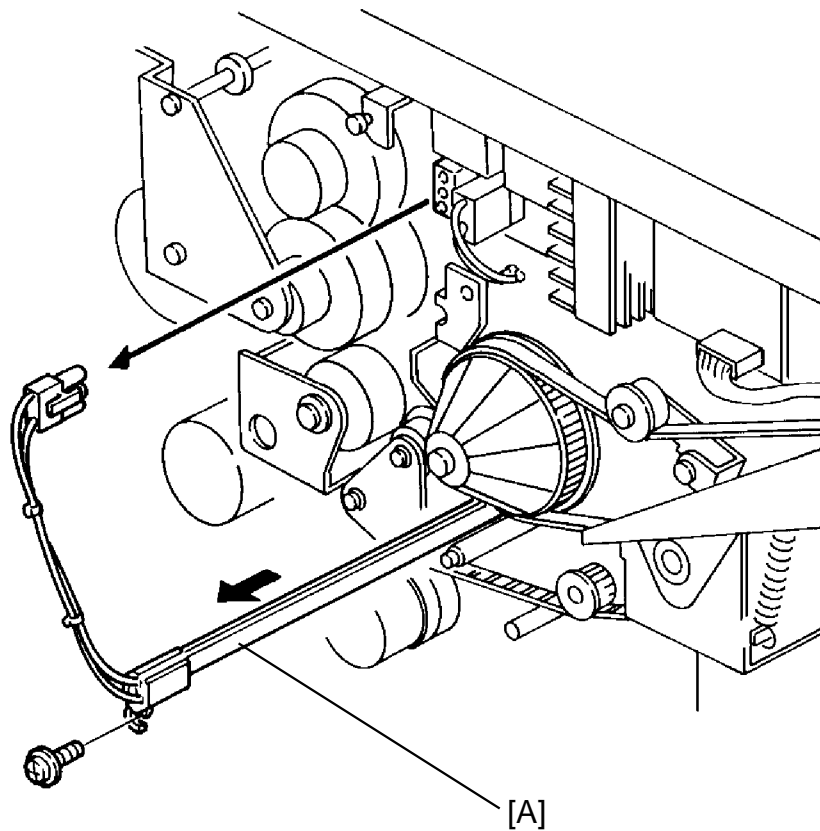
6.8 PTL FILTER CLEANING AND REPLACEMENT



1. Lower the T&S corona unit and remove the following units from the copier:
Black (and color) development unit/Cleaning unit/Charge corona unit / Drum unit
2. While holding the tab [A] of the PTL top mylar [B], bend the mylar and unhook the front side of the mylar from the hook [C], then from the rear side.
3. Remove the PTL filter assembly from the drum side.
4. Clean the PTL filter [D] with a blower brush and a dry cloth.
Discharge static electricity on the filter by touching it with your finger.
5. Reinstall the PTL filter assembly in the copier.

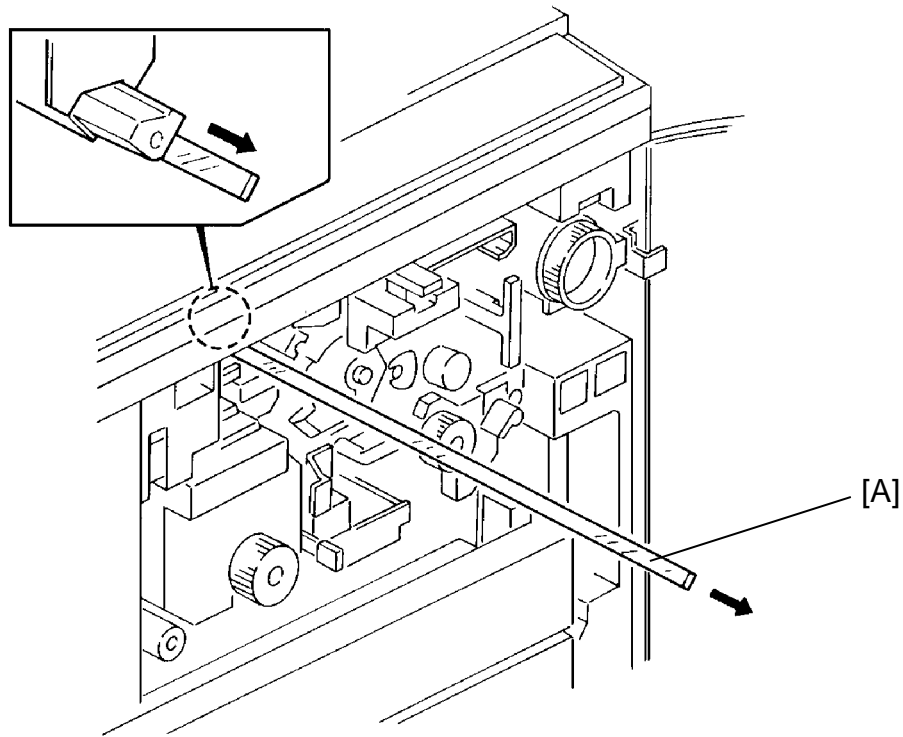
NOTE: a) Make sure that the PTL lower mylar [E] is positioned under the pre-transfer lamp [F].
b) Slide the top mylar towards the front and the rear to make sure that the front and rear sides of the PTL top mylar are positioned correctly in the hooks. If the mylar edge of the tab side is wavy, the position is incorrect.

6.9 PRE-TRANSFER LAMP REPLACEMENT



1. Remove the PTL filter assembly from the copier (see PTL Filter Cleaning And Replacement).
2. Remove the registration clutch from the copier (see Registration Clutch Replacement).
3. Slide out the pre-transfer lamp [A] from the copier (1 screw, 1 connector, and 2 wire saddles).
4. Install a new pre-transfer lamp and reassemble the copier.

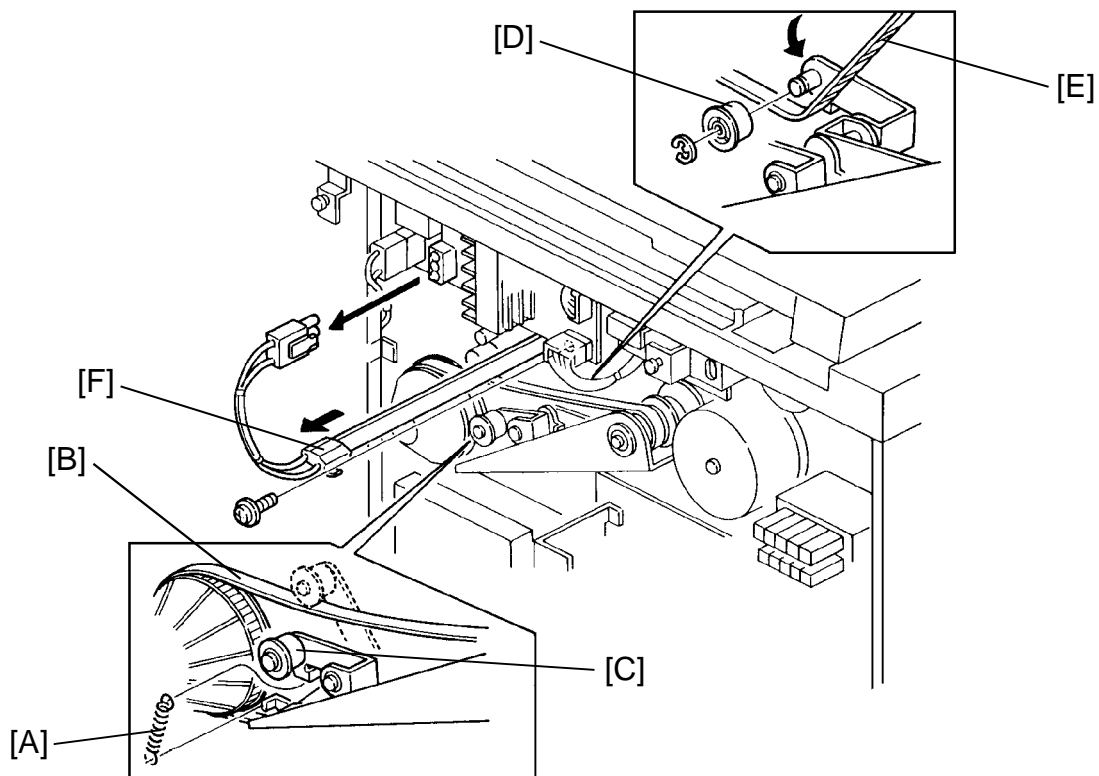
6.10 QUENCHING LAMP FILTER CLEANING



1. Open the front cover and pull out the quenching lamp filter [A].
2. Clean the filter with a dry cloth and discharge static electricity on the filter by touching it with your finger.
3. Reinstall the filter in the copier.

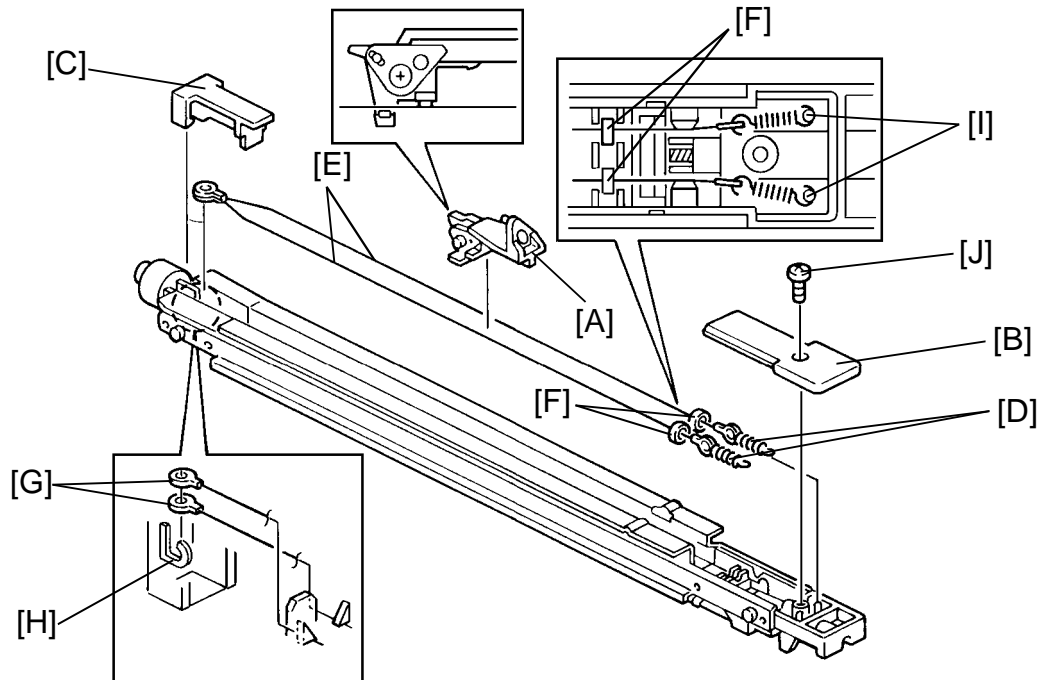
NOTE: When inserting the quenching filter, be careful not to break it.

6.11 QUENCHING LAMP REPLACEMENT



1. Remove the copier rear cover.
2. Remove the tension spring [A] of the drum drive belt [B].
3. Slip off the drum drive belt from the tension pulley [C] and lower the tension pulley.
4. Remove the tension pulley [D] (1 E-ring) for the development drive belt [E].
5. Slide out the quenching lamp [F] from the copier (1 screw and 1 connector).
6. Install a new quenching lamp and reassemble the copier.

6.12 CHARGE CORONA WIRE REPLACEMENT



1. Remove the screw securing the charge corona wire cleaner [A] and pull out the charge corona unit with the wire cleaner.
2. Remove the wire cleaner from the charge corona unit.
3. Remove the front end block cover [B] (1 plastic screw) and the rear end block cover [C] (2 hooks).

NOTE: When removing the rear end block cover, be careful not to break off the side hooks.

4. Unhook the corona wire tension spring [D] and remove the charge corona wire [E]. Remove both corona wires.

NOTE: a) Be careful not to damage the corona wire tension spring.
b) Be careful not to lose the tension springs and the damper rings [F].

5. Clean the charge corona casing and the end blocks.

NOTE: a) Clean the casing with water first to remove NOx. Then clean it with alcohol if any toner still remains on the casing.

b) Clean the end blocks with a blower brush to remove toner and paper dust. Then clean it with alcohol if any toner still remains on it.

c) Do not touch the charge guide plate with bare hands, bend or dent it.

6. Install new corona wires with the damper rings on the corona unit.

NOTE: a) Set the big eyelet [G] of the corona wire in the rear hook [H], then set the front end with the tension spring. The spring should be positioned at the bottom part of the hooking pole [I].

b) Do not touch the corona wire with oily bare hands. Oil stains may cause white bands on copies.

c) Do not bend or scratch the wire to avoid any uneven charge.

d) Make sure that the damper rings are correctly positioned in the front end block as shown.

e) Make sure that the corona wires are correctly positioned in both the front and rear end blocks as shown.

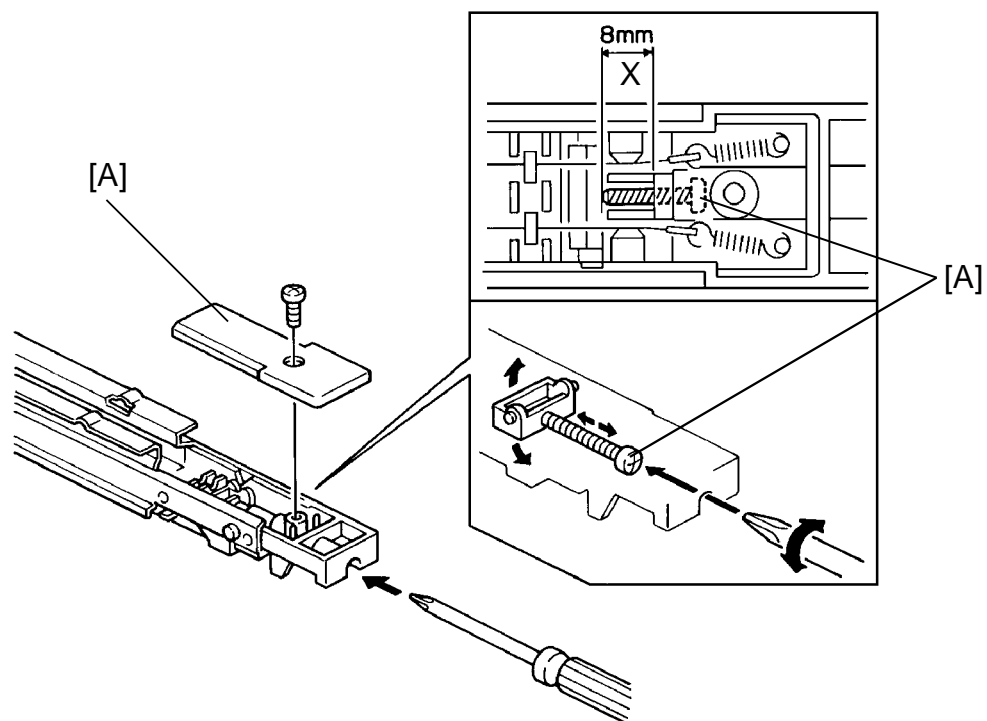
f) Do not change the corona wire height by turning the wire height adjustment screw.

7. Install the front and rear end block covers and set the wire cleaner.

NOTE: a) Do not secure the plastic screw [J] for the front end block cover too tight. Otherwise, it may be damaged when removing it.

b) Make sure that the corona wires are correctly positioned between the cleaner pads.

6.13 CHARGE CORONA WIRE HEIGHT ADJUSTMENT



NOTE: a) The charge corona wire height adjustment should be done only when the front end block is replaced.

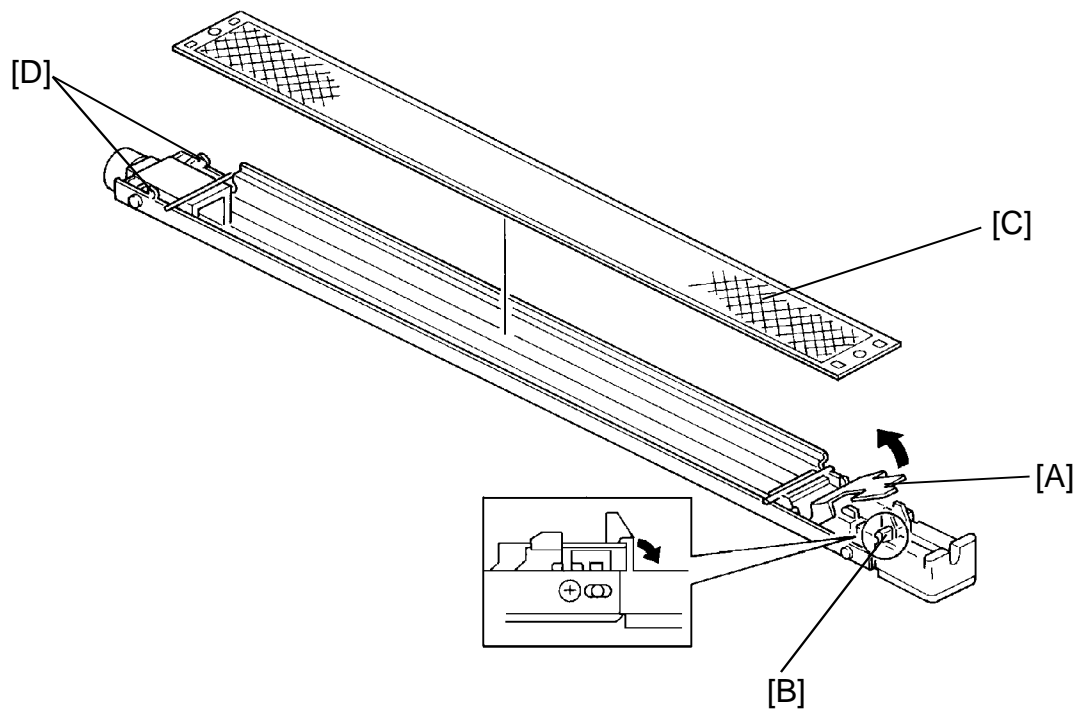
b) Before replacing the front end block of the charge corona unit, adjust the uneven exposure with the exposure adjusting plates and make a copy sample with the test chart for the reference.

1. Remove the wire cleaner and the front end block cover [A] (1 plastic screw) from the charge corona unit.
2. Adjust the gap "X" (between the wire height adjusting block and the screw holder edge) to 8.0 mm by turning the wire height adjusting screw [B] as shown in the illustration.
3. Reassemble the charge corona unit and set it in the copier.
4. Make copies with the test chart and compare the front and rear gray scales with those of the reference copy made before replacing the front end block. Adjust the corona wire height by turning the wire height adjusting screw, if necessary.

Turning the screw clockwise decreases the image density at the front side.

Turning the screw counterclockwise increases the image density at the front side.

6.14 CHARGE GRID PLATE REPLACEMENT



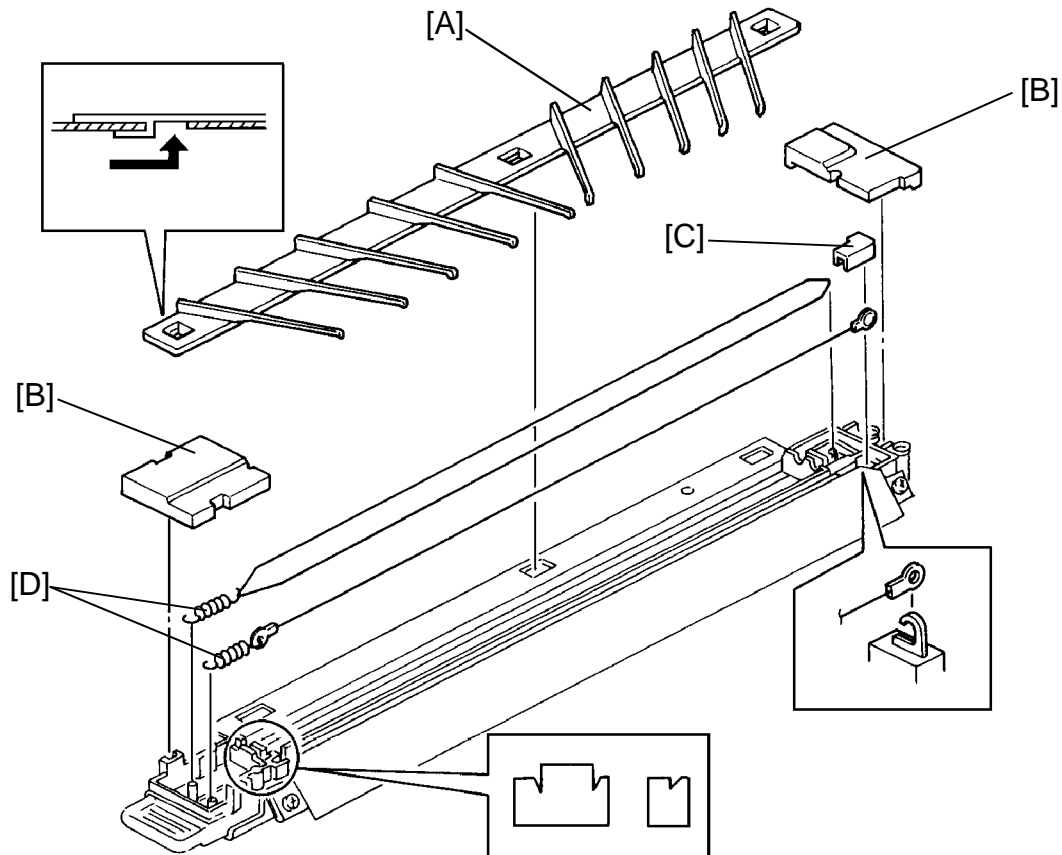
1. Remove the wire cleaner from the charge corona unit.
2. Unhook the grid anchor plate [A] from the hook on the front end block, and lift up the grid anchor plate as shown.

NOTE: When unhooking the anchor grid plate, be careful not to break off the hook [B].

3. Remove the old grid plate [C] from the charge corona unit.
4. Set a new grid plate on the rear hooks [D] first, then on the front hooks of the anchor plate by closing the anchor plate.

NOTE: a) Do not touch the charge grid plate with oily bare hands.
b) Do not bend the charge grid plate, or make any dent on it, to avoid uneven charge.

6.15 TRANSFER/SEPARATION CORONA WIRE REPLACEMENT



1. Lower the T & S corona unit and remove it from the copier.
2. Remove the paper guide [A] from the T & S corona unit by lifting the rear part and sliding it to the rear.
3. Remove the front and rear end block covers [B] (2 hooks each).
NOTE: When removing the end block covers, be careful not to break off the side hooks.
4. Remove the wire hook cover [C] from the rear end block.
5. Unhook the corona wire tension springs [D] and remove the transfer and separation corona wires.

NOTE: Be careful not to damage or lose the tension springs.

6. Clean the T & S corona casing and the end blocks.

NOTE: a) Clean the casing with water first to remove NOx. Then clean it with alcohol if any toner still remains on the casing.

b) Clean the end blocks with a blower brush to remove toner and paper dust. Then clean it with alcohol if any toner still remains.

c) Do not loosen the screws securing the transfer entrance guide mylar bracket.

7. Install a new transfer and separation corona wires.

NOTE: a) Do not touch the corona wires with oily bare hands.

b) Do not bend or scratch the corona wires.

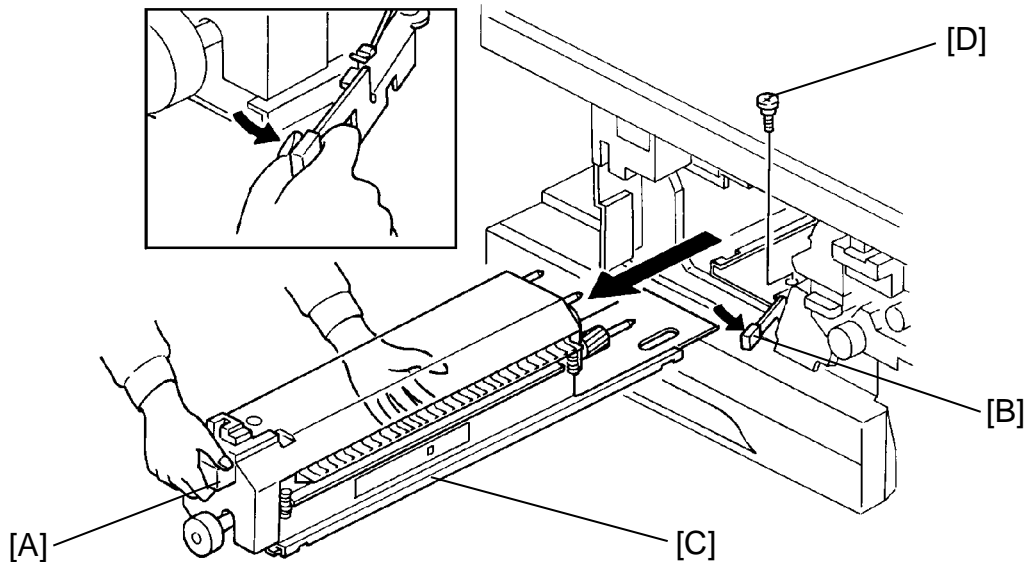
c) When installing the separation corona wire, make sure that the wire junction is positioned in the rear end block.

d) Make sure that the corona wires are correctly positioned in both the front and rear end blocks.

8. Reassemble the T & S corona unit.

7. FUSING

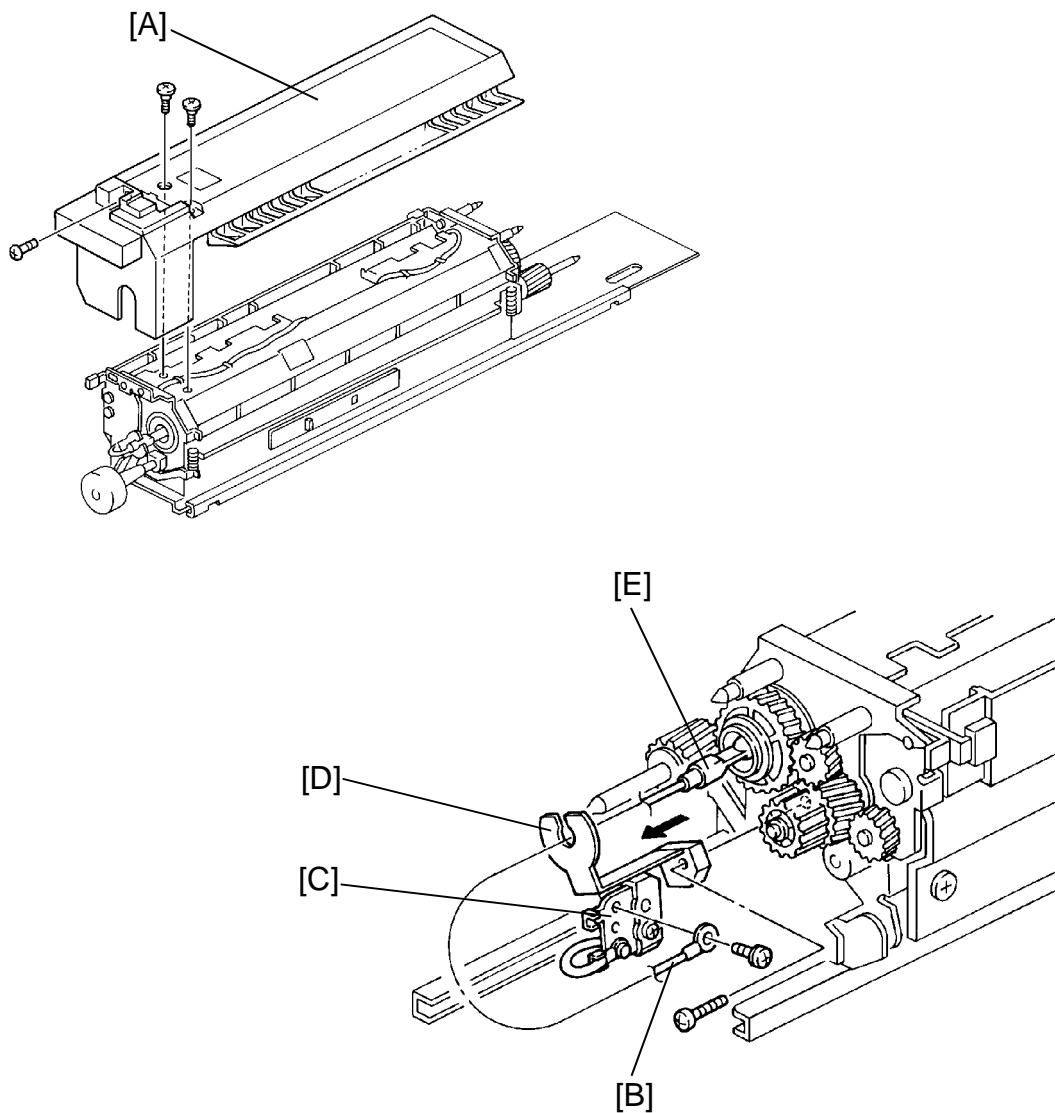
7.1 FUSING UNIT REMOVAL



1. Open the front cover and lower the T & S corona unit.
2. Remove the cleaning unit (see Cleaning Unit Removal).
3. Hold the fusing unit cover [A] while pushing the release lever [B], and pull out the fusing unit [C] until it stops.
4. Remove the fusing unit lock screw [D] (1 shoulder screw).
5. Remove the fusing unit completely while pushing the release lever.

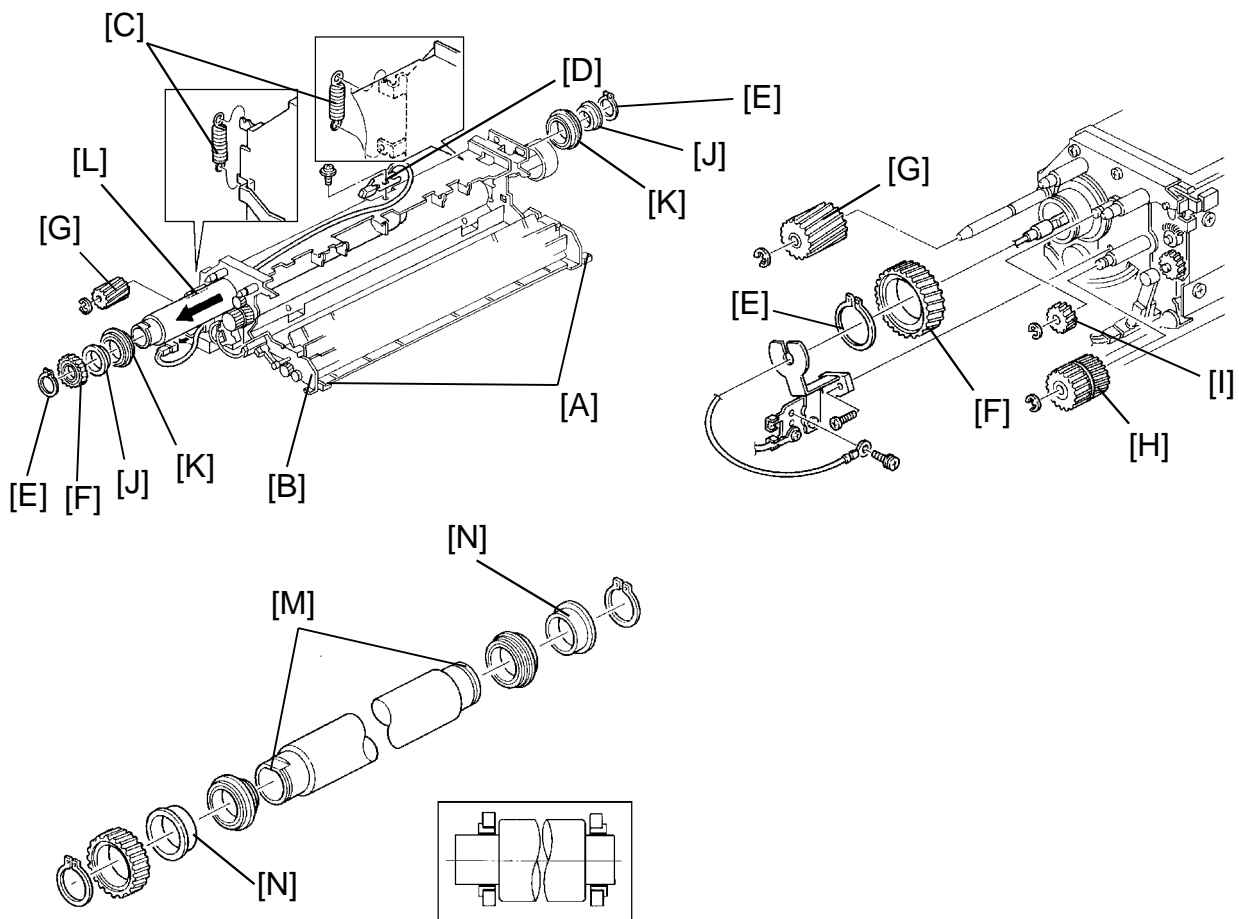
NOTE: Before completely removing the fusing unit, support the bottom of the fusing unit.

7.2 FUSING LAMP REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (2 shoulder screws, 1 screw).
3. Remove the fusing lamp harness [B] from the front and rear fusing lamp terminals [C] (1 screw each).
4. Remove the rear lamp holder [D] (1 screw) and replace the fusing lamp [E].

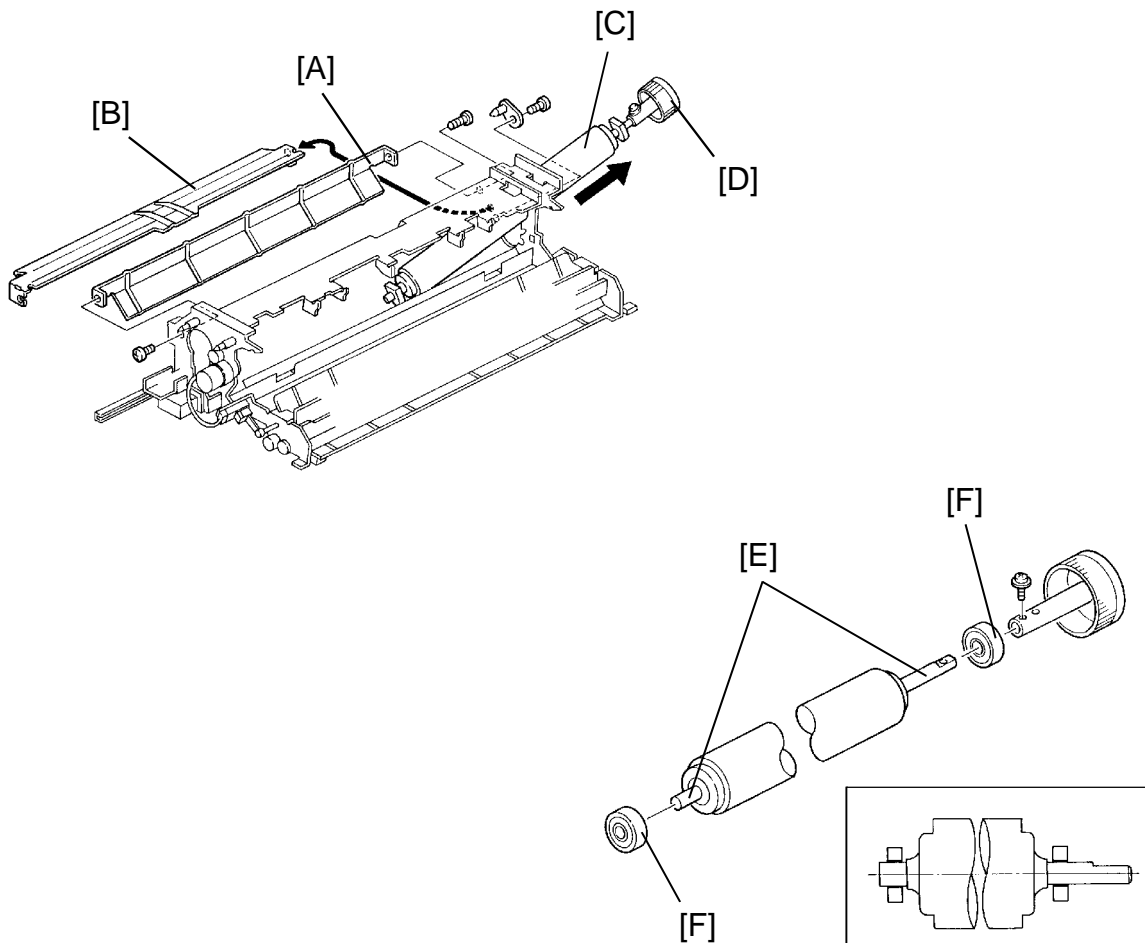
7.3 HOT ROLLER REPLACEMENT



1. Remove the fusing lamp (see Fusing Lamp Replacement).
2. Press both "B2" release levers [A] and lower the fusing exit assembly [B].
3. Remove the front and rear pressure springs [C].
4. Remove the fusing thermistor [D] (1 screw).
5. Remove the front and rear C-rings [E], 4 gears [F, G, H, I], front and rear collars [J], front and rear fusing bearings [K], and then remove the hot roller [L].

NOTE: a) Lubricate the roller shaft [M] and bushing [N] with BARRIERTA L55/2 grease
 b) Peel off 3 cm (1 inch) from both ends of the protective sheet, and install the hot roller.
 c) Before setting the pressure springs, remove the rest of the protective sheet.
 d) Lubricate the fusing drive gears and their shafts with grease G501.

7.4 PRESSURE ROLLER REPLACEMENT

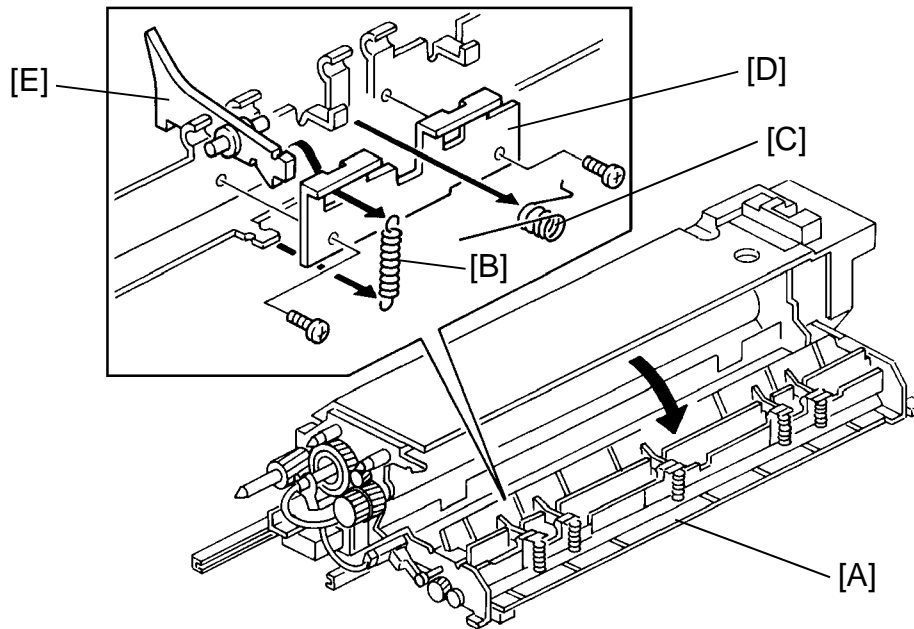


1. Remove the hot roller (see Hot Roller Replacement).
2. Remove the upper fusing entrance guide [A] (2 screws).
3. Remove the lower fusing entrance guide [B] (1 screw) as shown.
4. Remove the front lamp holder (1 screw).
5. Lift the front end of the pressure roller [C] and slide, along with its bearings, out the front side of the unit.
6. Remove the front and rear bearings and the fusing knob [D] (1 screw).
7. Replace the pressure roller.

NOTE: When installing a new pressure roller:

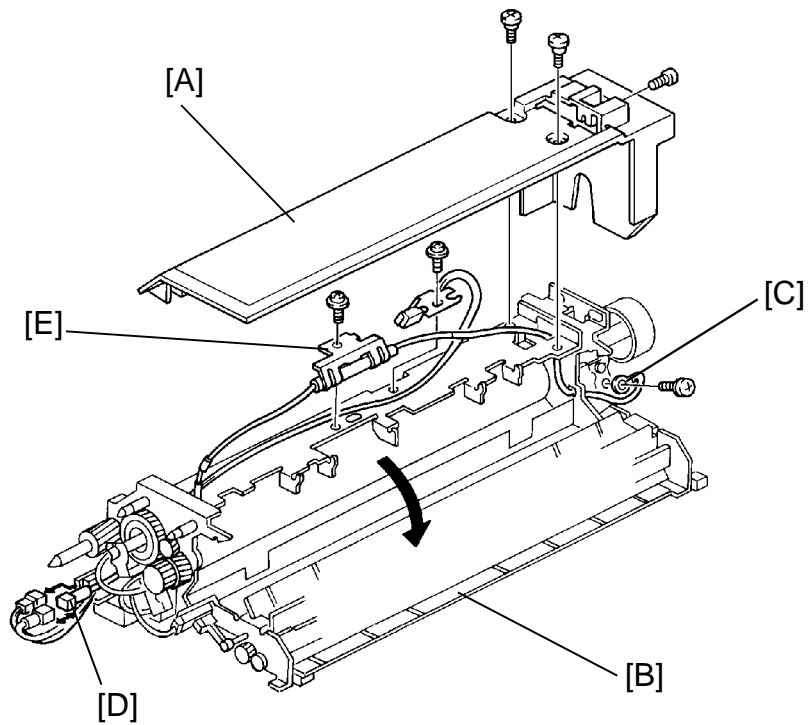
- a) Lubricate the roller shaft [E] and bearings [F] with BARRIERTA L55/2 grease.
- b) Lubricate the fusing drive gears and their shafts with grease G501

7.5 FUSING STRIPPER PAWL REPLACEMENT



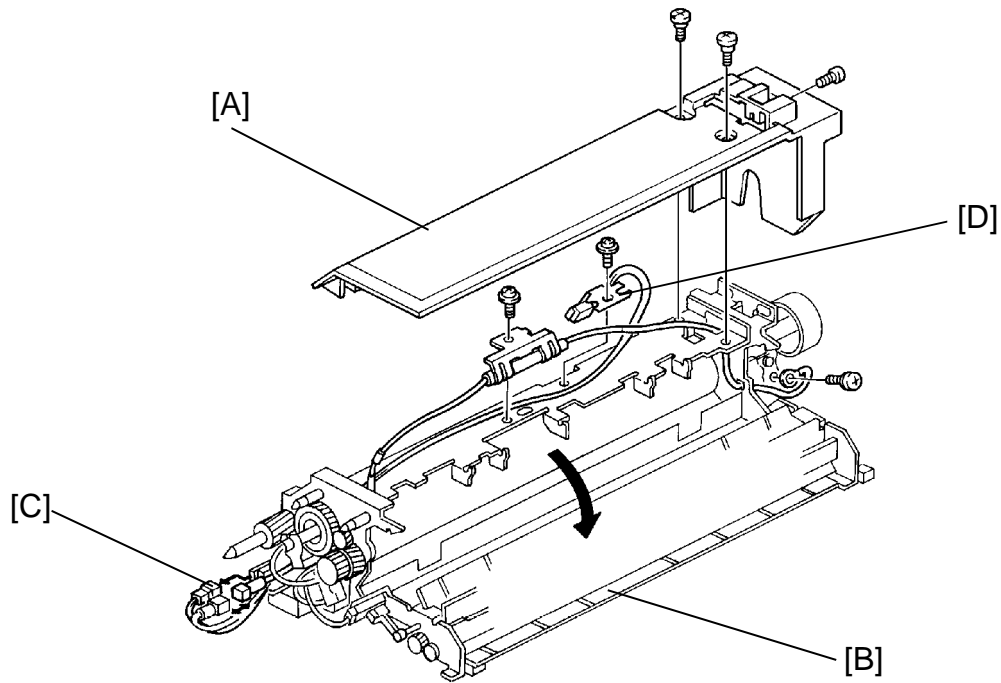
1. Remove the fusing unit (see Fusing Unit Removal).
2. Lower the fusing exit assembly [A].
3. Remove the pawl pressure springs [B] and pawl release springs [C].
4. Remove the 3 fusing pawl brackets [D] (5 screws).
5. Remove the fusing stripper pawls [E] and replace.

7.6 THERMOFUSE REPLACEMENT



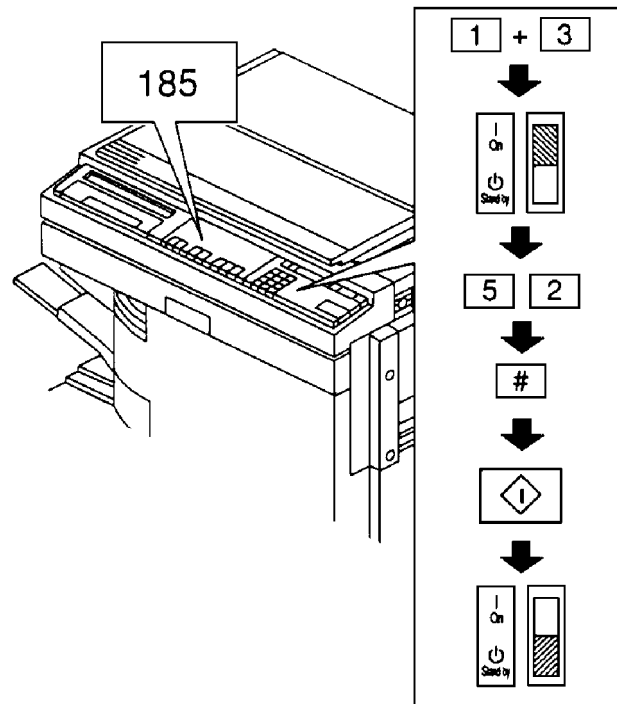
1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (2 shoulder screws, 1 screw).
3. Lower the fusing exit assembly [B].
4. Remove the thermofuse harness lead [C] (1 screw) from the front fusing lamp terminal and disconnect the thermofuse harness from the fusing harness [D].
5. Remove the thermofuse holder [E] (1 screw) then remove the thermofuse (2 plate clamps).

7.7 FUSING THERMISTOR REPLACEMENT



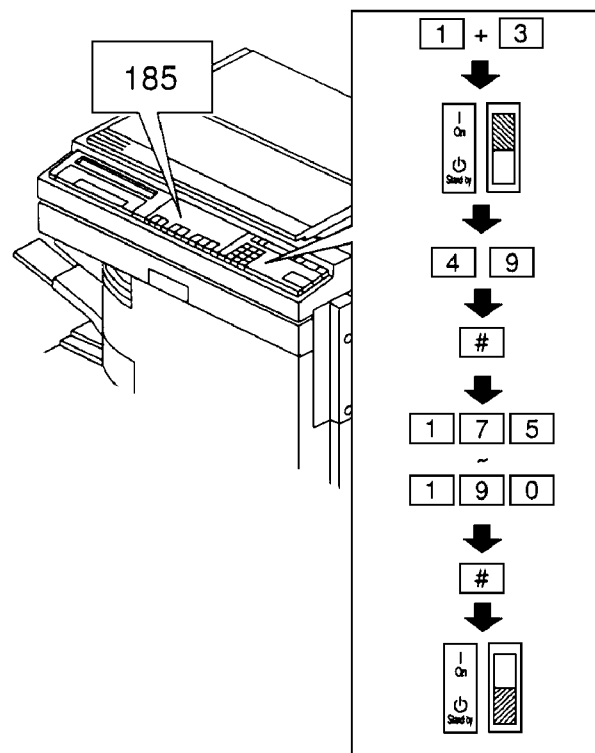
1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (2 shoulder screws, 1 screw).
3. Lower the fusing exit assembly [B].
4. Disconnect the thermistor harness [C] from the fusing harness.
5. Remove the fusing thermistor [D] (1 screw, 2 plate clamps).

7.8 FUSING TEMPERATURE CHECK (SP52)



1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch to access the SP mode.
3. Enter "52" (fusing temperature check mode) using the number keys and then press the enter key.
4. The current fusing temperature is indicated on the three digit indicator.
5. Turn the main switch off.

7.9 FUSING TEMPERATURE ADJUSTMENT (SP49)



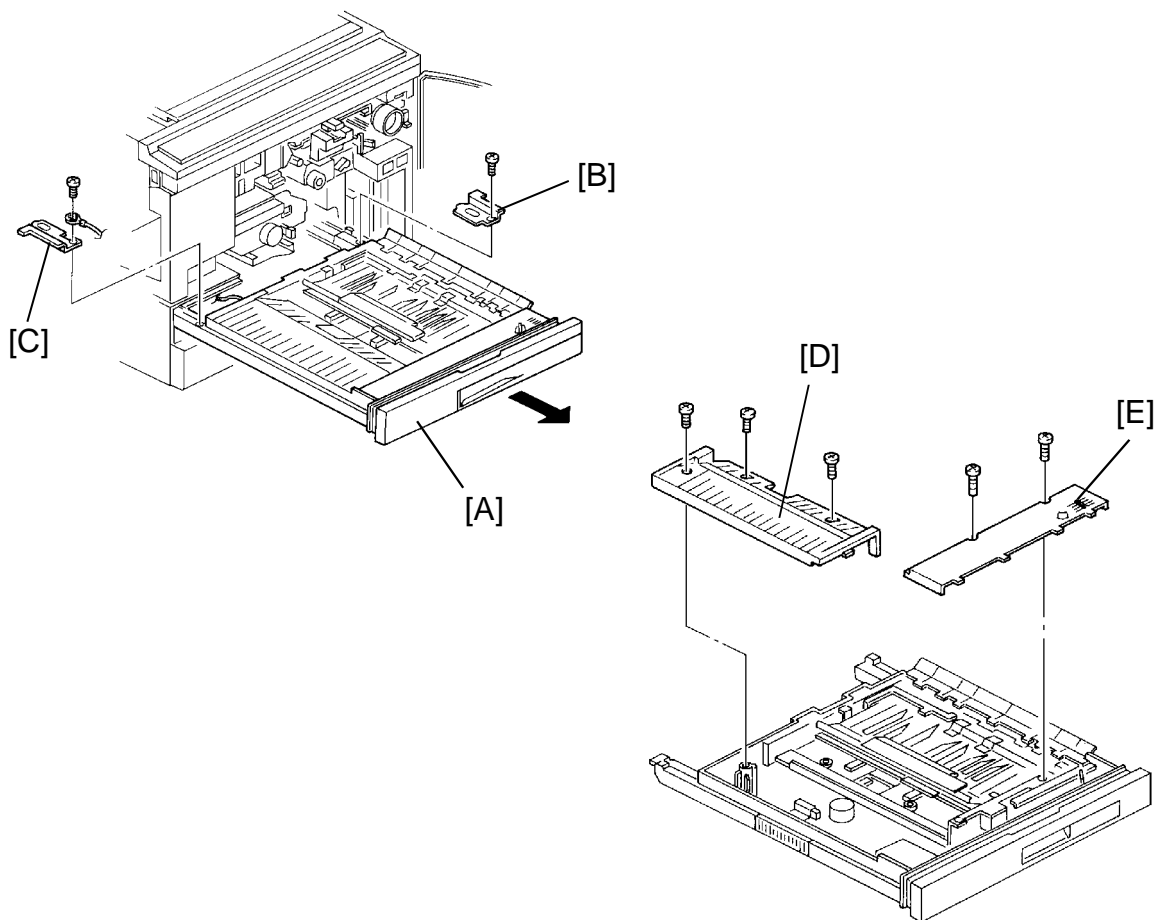
Standard Setting: 185°C

The fusing temperature can be adjusted between 175°C and 190°C in 1°C steps according to the following procedure:

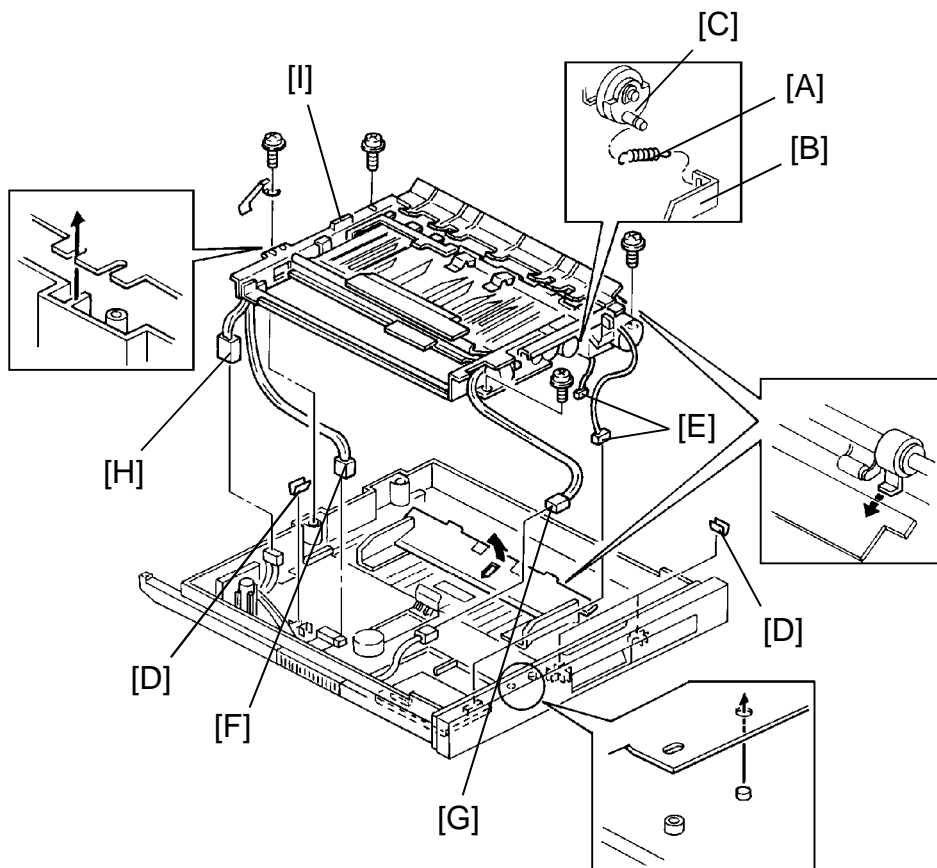
1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch to access the SP mode.
3. Enter "49" (fusing temperature adjustment mode) using the number keys and then press the enter key.
4. The current temperature setting blinks in the three digit indicator. Enter the new temperature setting with the number key, then press the enter key.
5. Turn the main switch off.

8. DUPLEX

8.1 DUPLEX UNIT REMOVAL

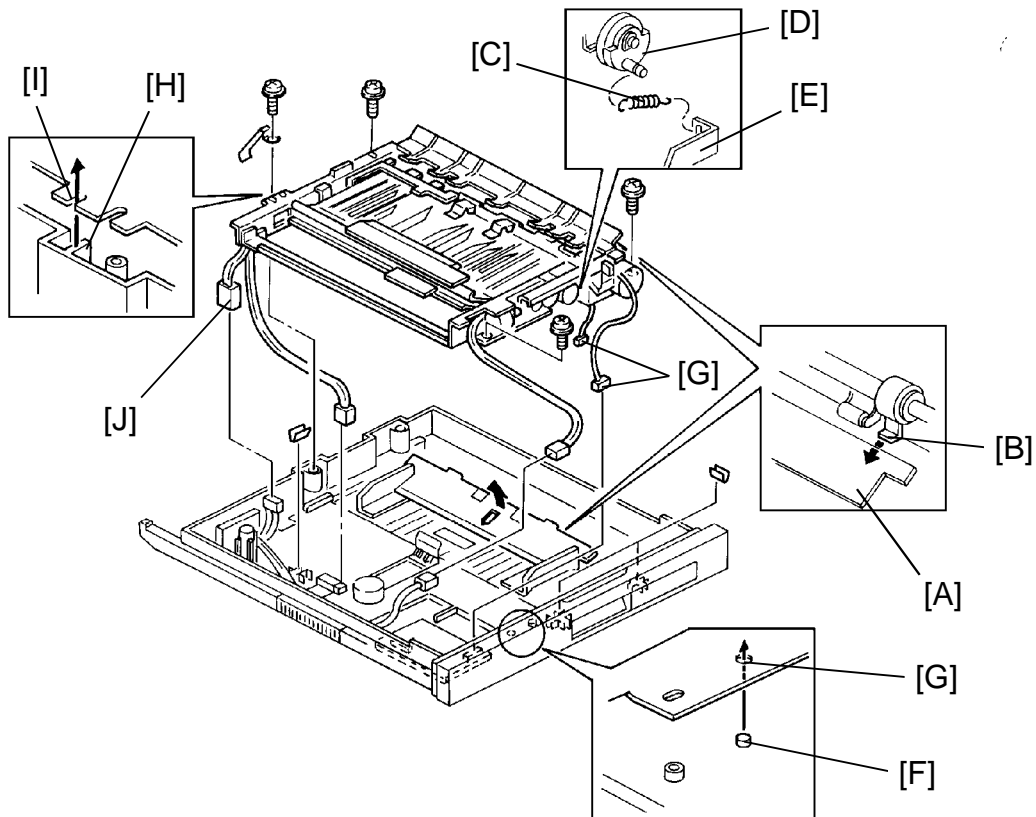


1. Open the front door.
2. Pull out the duplex tray [A] and remove the tray stopper brackets [B, C] from both side rails as shown (1 screw each), then remove the duplex tray from the copier.
3. Remove the side inner cover [D] (3 screws).
4. Remove the front inner cover [E] (2 screws).



5. Unhook the lift spring [A] from the duplex lift lever [B] and the cam clutch [C].
6. Remove 3 clamps [D] with a pair of pliers.
7. Disconnect CN602, and CN603 [E] from the duplex control board.
8. Disconnect the sensor connector [F] from the jogger home position sensor.
9. Disconnect the connectors [G, H] from the duplex turn gate solenoid and from the duplex entrance sensor.
10. Remove the duplex unit [I] (4 screws) from the tray.

NOTE: Hold both sides of the duplex unit frame when lifting the duplex unit out of the tray.



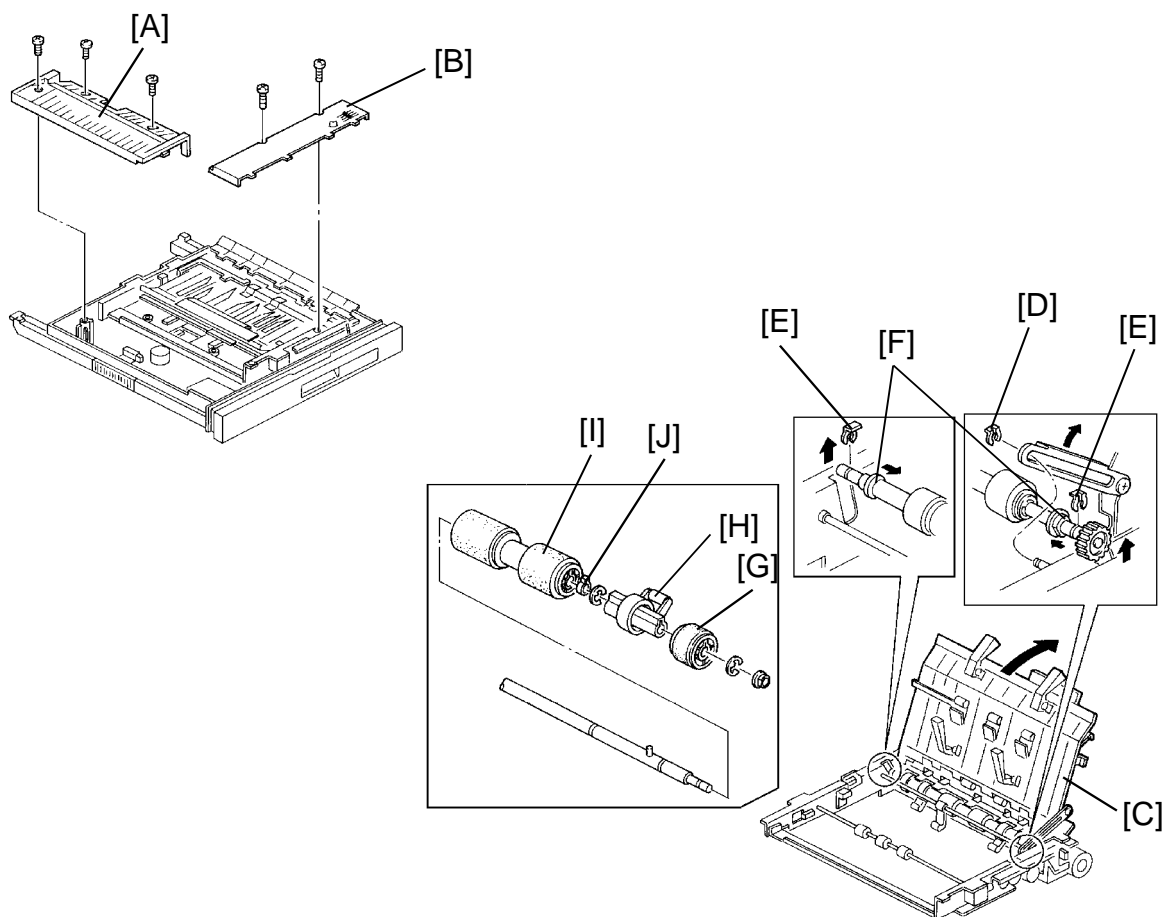
-Installation-

1. When placing the duplex unit back into the tray, hold up the bottom plate [A] so that the flipmylar brackets [B] fit under it as shown.
2. Hook the lift spring [C] to the cam clutch [D] and the duplex lift lever [E] as shown.

NOTE: When installing the duplex unit, make sure of the following:

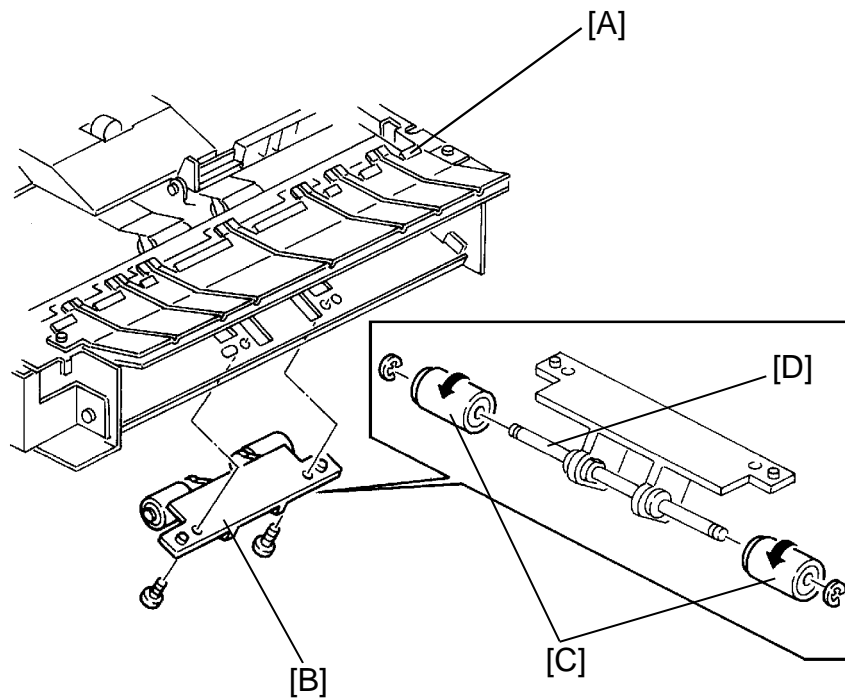
- a) The positioning pin [F] fits through hole [G] in the side plate.
- b) The positioning rib [H] fits through the cutout [I] in the side plate.
- c) The sensor harness [J] is not caught under the unit frame.

8.2 DUPLEX FEED ROLLER REPLACEMENT



1. Open the front door.
2. Pull out the duplex tray.
3. Remove the side inner cover [A] and front inner cover [B] (5 screws).
4. Raise the upper and lower paper guide plates [C] all the way up and remove the snap ring [D] for the guide plate support arm.
5. Remove the snap ring [E] from both ends of the paper feed roller shaft.
6. Move the front and rear bushings [F] of the paper feed roller shaft inward and remove the paper feed roller assembly.
7. Remove the bushing, the rear stack roller [G] (1 E-ring) and rear paper flattener [H] from the shaft.
8. Remove the duplex feed roller [I] from the shaft (1 E-ring).
9. Remove the feed roller bushing [J] from the roller and place it in the new roller.
10. Reassemble the duplex unit.

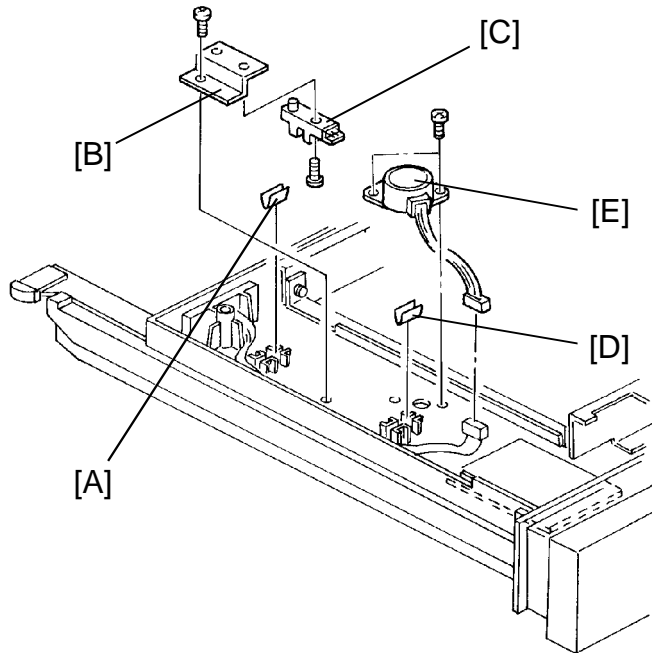
8.3 DUPLEX FRICTION ROLLER REPLACEMENT



1. Remove the duplex unit [A] from the tray (see Duplex Unit Removal).
2. Remove the friction roller assembly [B] (2 screws) from the duplex unit.
3. Remove the friction rollers [C] (1 E-ring each) from the shaft [D].
4. Install new friction rollers on the shaft and reassemble the duplex unit.

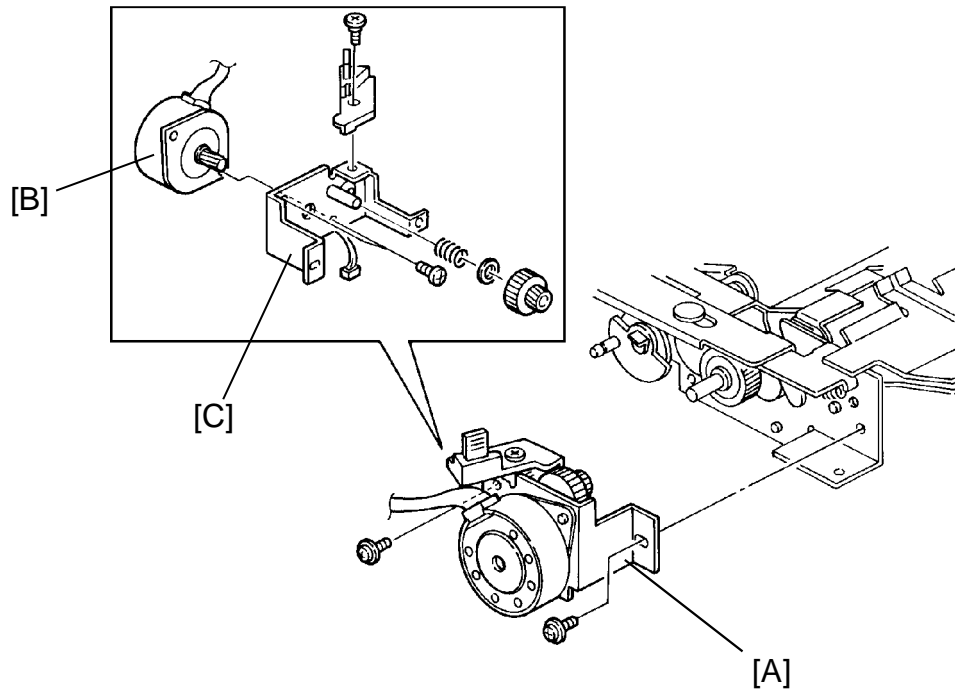
NOTE: This friction roller has a one-way clutch. Be sure to install the roller so that it rotates in the direction of the arrow (see illustration).

8.4 JOGGER HOME POSITION SENSOR AND JOGGER MOTOR REPLACEMENT



1. Pull out the duplex tray and remove the side and front inner covers.
2. Remove the clamp [A] and sensor bracket [B] (1 screw).
3. Remove the jogger home position sensor [C] from the bracket and replace it (1 screw and 1 connector).
4. Remove the clamp [D] and replace the jogger motor [E] (2 screws and 1 connector).

8.5 DUPLEX MOTOR REPLACEMENT



1. Remove the duplex unit from the tray (see duplex unit removal).
2. Remove the duplex motor assembly [A] (2 screws).
3. Separate the duplex motor [B] from the bracket [C] and replace it (2 screws).

NOTE: When installing a new duplex motor, make sure that the duplex motor thermistor is secured on the motor bracket by the screw for the motor.

9. COPY QUALITY ADJUSTMENT

9.1 LIGHT INTENSITY ADJUSTMENT (SP48)

- When: After performing SP66 (Drum initialize) and before exiting the SP mode when replacing the drum.
- Purpose: To properly adjust light intensity for the initial VL pattern detection (storing Vref = initial Vlp/Vlg)
- Adjustment standard: Level 2 of the gray scale on the OS-A3 test chart should be just visible on the copy when the 4th manual image density level is selected.
- How: SP48 changes the exposure lamp voltage from ac drive circuit on the dc power supply board.

NOTE: Light intensity adjustment should be done only after performing SP66 when replacing the drum. If light intensity is adjusted after the initial VL pattern detection, the light intensity will be changed to the initial setting by subsequent VL corrections. As an exception for this ± 0.5 V change of SP48 data is effective to the light intensity even after the initial VL pattern detection. Because the VL correction changes the lamp voltage ± 1 V step.

- 1. Turn the main switch off.
- 2. Clean the following parts:

Item No.	Section	Method
(1)	Optics (mirrors, lens, reflectors, and exposure glass)	Damp cotton, and blower brush
(2)	Corona wires (charge, transfer, and separation) and corona unit casing	Dry cloth or water
(3)	QL filter, PTL filter, toner shield glass and filter, and erase lamp unit	Dry cloth and blower brush

- 3. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.
NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.
- 4. Enter "48" using the number keys and press the "#" key.

5. Press the "#" key again and set the OS-A3 chart on the exposure glass.
6. Make a full size copy at the manual image density level 4 (center) after the copier has warmed up (when the beeper sounds 3 times).

NOTE: Make sure that the data in SP37 (black bias) is set to "0" (standard value).

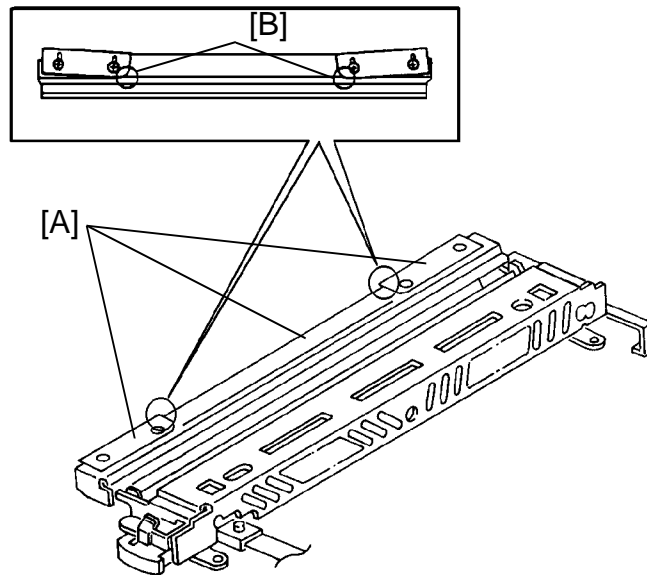
7. Confirm that level 2 of the gray scale is just visible on the copy.
8. If the image density is not correct, go through the following steps.
 - (1) Press the "#" key twice.
 - (2) Change the exposure lamp voltage data displayed in the three digit indicator. Use the number keys and follow these rules: If image density is too dark: increase the setting. If image density is too light: decrease the setting

NOTE: The data can be set between 50 and 75 in 0.5 steps. The default setting is "63".

- (3) Press the "#" key twice and then make a copy at the manual image density level 4.
 - (4) Confirm if the image density is correct or not. If not, repeat the above steps from (1) to (3).
9. Turn the main switch off and on.

9.2 UNEVEN EXPOSURE ADJUSTMENT

When:	If the exposure is uneven.
Purpose:	To maintain even exposure.
Adjustment standard:	The side-to-side variation of the gray scales on the test chart should be less than one level.
How:	Change the position of the exposure adjusting plates to make the light intensity from the exposure lamp even across its length.



NOTE: Do not adjust the charge corona wire height to correct uneven image density on the copy. Otherwise, the total charge corona current will change, causing incorrect toner density control.

1. Clean the optics components and the charge corona wire.
2. Place a test chart on the exposure glass and make an A3/11" x 17" copy.
3. If the side-to-side variations of the gray scales is not within the adjustment standard, turn off the main switch and remove the exposure glass (see Exposure Glass Removal).
4. Position the adjusting plates [A] so that the copy image meets the adjustment standard. The leading edges [B] of the three adjusting plates must be aligned to avoid white streaks.

9.3 IMAGE AREA BIAS VOLTAGE ADJUSTMENT

9.3.1 Black Bias Adjustment (SP37)

When: If the image density at the manual density level 4 cannot be adjusted by exposure lamp voltage (SP48) after performing SP66 (drum initialize) when replacing the drum is replaced.

Purpose: To adjust the copy image density.

How: SP37 changes the development bias voltage for black image and VL pattern.

NOTE: Normally the black bias data should be set to "0" (standard). Black bias adjustment should be done only when adjusting light intensity (SP48) after performing the drum initialization (SP66), if necessary.

If black bias is adjusted after the initial VL detection, the light intensity will be corrected to make the VL pattern similar in density to the initial setting, by subsequent VL corrections. This means that the effect of changing black bias is gradually eliminated.

SP37: Black Bias

Data	Density	Development Bias Correction Voltage
0	Normal	±0 V
1	Darkest	+40V
2	Darker	+20V
3	Lighter	– 20V
4	Lightest	– 40V

1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.
NOTE: Release the number keys after confirming that the Call Service indicator and the Copy Counter number "0" are blinking.
3. Enter "37" using the number keys and press the "#" key.
4. Change the setting displayed in the three digit indicator by the number keys. Determine the proper setting from the above table. Press the "#" key.

9.3.2 Color Bias Adjustment (SP79)

- When: If color image density is improper compared with black image density.
- Purpose: To improve color image density.
- How: SP79 changes the development bias voltage for color images.

SP79: Color Bias

Data	Density	Development Bias Correction Voltage
0	Normal	±0 V
1	Darkest	+40V
2	Darker	+20V
3	Lighter	– 20V
4	Lightest	– 40V

1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.
NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.
3. Enter "79" using the number keys and press the "#" key.
4. Change the setting displayed in the three digit indicator by the number keys. Determine the new setting from the above table. Press the "#" key.
5. Turn the main switch off and on.

9.3.3 Highlight Bias (Manual ID Level 7) Adjustment (SP46)

- When: If a customer requests a lighter or darker copy image density at manual image density level 7.
- Purpose: To meet customer's request about the image density at manual ID level 7.
- How: SP46 changes the development bias voltage for images at manual ID level 7.

SP46: Highlight Bias

Data	Density	Development Bias Correction Voltage
0	Normal	-- 240V
1	Darker	-- 200V
2	Lighter	-- 280V
3	Lightest	-- 320V

1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.
NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.
3. Enter "46" using the number keys and press the "#" key.
4. Change the setting displayed in the three digit indicator by the number keys. Determine the new setting from the above table. Press the "#" key.
5. Turn the main switch off and on.

9.4 TONER DENSITY ADJUSTMENT

9.4.1 Black Toner Density Adjustment (SP33)

- When:

If a customer wants to change the overall image density of black copies.
- Purpose:

To change toner concentration inside the black development unit.
- How:

SP33 changes the development bias for the black ID sensor pattern.

SP33: Black Pattern Bias

Data	Black Toner Density	Development Bias Voltage for ID sensor Pattern	
		0~500	501~
0	Normal	-220V	-200V
1	Lighter	-180V	-160V
2	Darker	-240V	-220V
3	Darkest	-260V	-240V

1. Turn the main switch off.

2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.

NOTE:

Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.

3. Enter "33" using the number keys and press the "#" key.

4. Change the setting displayed in the three digit indicator by the number keys. Determine the new setting from the above table. Press the "#" key.

5. Turn the main switch off and on.
- FSM

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FT5733/5433

9.4.2 Color Toner Density Adjustment (SP75)

- When:

If a customer wants to change the overall image density of color copies.
- Purpose:

To change toner concentration inside the color development unit.
- How:

SP75 changes the development bias for the color ID sensor pattern.

SP75: Red/Blue/Green Pattern Bias

Data	Black Toner Density	Development Bias Voltage for ID sensor Pattern			
		0~500		501~	
		Red/Blue	Green	Red/Blue	Green
0	Normal	--200V	--240V	--180V	--220V
1	Lighter	--160V	--200V	--140V	--180V
2	Darker	--220V	--260V	--200V	--240V
3	Darkest	--240V	--280V	--220V	--260V

1. Turn the main switch off.

2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.

NOTE:

Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.

3. Enter "75" using the number keys and press the "#" key.

4. Change the setting displayed in the three digit indicator by the number keys. Determine the new setting from the above table. Press the "#" key.

5. Turn the main switch off and on.
- FT5733/5433

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FSM

9.5 DETECT / FIXED TONER SUPPLY MODE
SELECTION (SP30)

- When: If the type of original is almost the same with high image density and proportion, and adjusting the toner supply ratio (SP31) and toner density check interval (SP35) do not give constant image density without toner scattering problem.
- Purpose: To leave the detect mode and to supply a constant amount of toner in every copy cycle.
- How: SP30 turns on the toner supply clutch every black copy cycle.

NOTE: On this copier the ID sensor is used in the fixed supply mode as well as in the detect mode. Therefore, the fixed supply mode cannot be used when the ID sensor is in an abnormal condition.

The fixed toner supply mode is applied only to the black development unit, not to the color one.

- SP30: Black Toner Supply Mode
- 0: Detect mode
 - 1: Fixed mode

9.6 TONER SUPPLY RATIO SELECTION
(SP31/SP32/SP81)

When: If the standard setting for toner supply amount is not appropriate for the type of original in use.

Purpose: To adjust the toner supply amount.

How: Detect mode: SP31 for black toner, SP81 for color toner
Fixed mode: SP32 for black toner

All three service programs change the toner supply clutch ON period.

NOTE: Each color can have an independent toner supply ratio. The selected toner supply ratio corresponds to the color development unit installed in the copier.

SP31: Black Toner Supply Ratio
(Detect Mode)

Data	0	1	2	3
Supply Ratio	15%	7.5%	30%	60%
Toner Supply Ratio Parameter	2	1	4	8

SP81: Red/Blue/Green Toner
Supply Ratio (Detect Mode)

Data	0	1	2	3
Supply Ratio	14%	7%	21%	28%
Toner Supply Ratio Parameter	2	1	3	4

SP32: Black Toner Supply Ratio
(Fixed Mode)

Data	0	1	2	3
Supply Ratio	7%	3.5%	10.5%	14.0%
Toner Supply Ratio Parameter	2	1	3	4

9.7 TONER DENSITY CHECK INTERVAL SELECTION (SP35/SP74)

When: If a customer complains of low image density of copies during a toner near end condition.

Purpose: To check toner density more often.

How: SP35 for black toner and SP74 for color toner change the interval of ID sensor pattern detection.

NOTE: Normally, "0" (every 5 copies) should be selected for color toner (SP74).

SP30: Black ID Detection	SP74: Color ID Detection
0: Every 10 copies	0: Every 5 copies
1: Every 5 copies	1: Every 10 copies

9.8 ID SENSOR AND V SENSOR AUTOMATIC ADJUSTMENT (SP54)

When: 1. After cleaning, removing, or replacing the ID sensor board or V sensor board.
2. At replacement of the OPC drum or RAM board on the main control board.
3. If a toner supply control problem occurs.
4. If memory all clear (SP99) has been performed.

Purpose: To make sure that ID sensor and V sensor functions correctly.

Adjustment standard: ID sensor: $V_{sg} = 4.0 \pm 0.2 \text{ V}$
V sensor: $V_{lg} = 4.0 \pm 0.2 \text{ V}$

How: SP54 adjusts PWM value in memory for ID sensor and V sensor LED's to get correct sensor output.

NOTE: Beeper sounds 2 times when the adjustment (about 4 seconds) are completed.
The adjusted PWM value and sensor output can be monitored by SP165 (ID-sensor PWM/Output Check) and SP166 (V-sensor PWM/Output Check). Refer to the SP mode table for details.

9.9 ADS SENSOR AUTOMATIC ADJUSTMENT (SP56)

- When:
- 1. If ADS output voltage is not within the adjustment standard after cleaning the optics.
 - 2. At replacement of the following parts: ADS board, Exposure lamp, RAM board onthe main control board, and dc power supplyboard and OPC drum.
 - 3. If memory all clear (SP99) has been performed.

Purpose: To make sure that the ADS sensor functions correctly.

Adjustment standard: ADS Voltage = 1.5 ±0.1 V

How: SP56 adjusts ADS gain data in memory to get the correct sensor output.

NOTE: Close the platen cover to prevent external light from reaching the ADS sensor when performing this adjustment.
The beeper sounds 2 times when the adjustment (about 4 seconds) are completed.
The adjusted ADS gain data and the sensor output can be monitored by SP167 (ADS gain/Output Check). Refer to the SP mode table for details.

9.10 ADS DENSITY SELECTION (SP34)

When: If image density of copies is too light or dirty background appears on copies in ADS mode.

Purpose: To maintain good copy quality in ADS mode.

How: SP34 increases negative grid bias voltage for darker setting and increases negative development bias voltage for lighter setting.

SP34: ADS Density
0: Normal
1: Darker
2: Lighter

9.11 VERTICAL MAGNIFICATION ADJUSTMENT (SP43)

When:	If vertical magnification is not within the adjustment standard.
Purpose:	To maintain proper vertical magnification.
Adjustment standard:	Less than $\pm 1.0\%$ difference between original and copy.
How:	SP43 changes the scanner speed compensation.

1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.

NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.

3. Enter "43" using the number keys and press the "#" key.
4. Press the "#" key again and place a 150 mm scale on the exposure glass perpendicular to the left scale.
5. Make a full size copy after the copier has warmed up.
6. Confirm that vertical magnification is within the adjustment standard.
7. If vertical magnification is not correct, go through the following steps.
 - (1) Press the "#" key twice.
 - (2) Change the vertical magnification setting displayed in the three digit indicator. Use the number keys and follow these rules:

If the copy image is too short:	increase the setting
If the copy image is too long:	decrease the setting
 - (3) Press the "#" key twice and then make a copy.
 - (4) Confirm if vertical magnification is correct or not. If not, repeat the above steps from (1) to (3).
8. Turn the main switch off and on.

9.12 HORIZONTAL MAGNIFICATION ADJUSTMENT (SP44)

When:	If horizontal magnification is not within the adjustment standard.
Purpose:	To maintain proper horizontal magnification.
Adjustment standard:	Less than $\pm 0.5\%$ difference in full size mode between original and copy.
How:	SP44 changes the lens home position.

1. Turn the main switch off.
2. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch.
NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.
3. Enter "44" using the number keys and press the "#" key.
4. Press the "#" key again and place a 150 mm scale parallel to the left scale on the exposure glass.
5. Make a full size copy after the copier has warmed up.
6. Confirm that horizontal magnification is within the adjustment standard.

7. If horizontal magnification is not correct, go through the following steps:

- (1) Press the "#" key twice.
- (2) Change the horizontal magnification setting displayed in the three digit indicator. Use the number keys and follow these rules:
If the copy image is too short: increase the setting
If the copy image is too long: decrease the setting

NOTE: SP44 can be set between 0 and 31. Horizontal magnification changes 0.2% per step.

- (3) Press the "#" key twice and then make a copy.
 - (4) Confirm if horizontal magnification is correct or not. If not, repeat the above steps from (1) to (3).
8. Turn the main switch off and on.

9.13 FOCUS ADJUSTMENT IN FULL SIZE (SP47)

- When: If the copy image in full size mode is out of focus.
After adjusting horizontal magnification.
- Purpose: To maintain correct focus in full size mode.
- How: SP47 changes the 3rd scanner home position.

NOTE: Adjust focus by checking pictures on copies.
Check the horizontal magnification after SP47, and adjust it if necessary.

SP47: Focus Adjustment
0 - 80 (40 = default), 0.6 mm per step

9.14 FOCUS ADJUSTMENT IN ENLARGE/REDUCTION (SP50)

- When: If the copy image is out of focus in enlarge/reduction mode after adjusting SP43 (vertical magnification), SP44 (horizontal magnification), and SP47 (focus adjustment in full size).
- Purpose: To maintain correct focus in enlarge/reduction mode.
- How: SP50 changes the lens position 0.1% per step in enlarge/reduction mode.

NOTE: Normally the factory-set value is best for this adjustment.

SP50: Lens Error Correction
0 - 15 (8 = default, – 0.8% to + 0.7%)

9.15 VERTICAL MAGNIFICATION ADJUSTMENT IN
DUPLEX/ OVERLAY MODE (SP45)

- When: If vertical magnification is different between the first and second images in duplex/overlay mode.
- Purpose: To equal vertical magnification between the first and second images in duplex/overlay mode.
- How: SP45 increases vertical magnification for the first image to equal that for the second image.

NOTE: Normally in duplex/overlay mode, the first image is a little shorter than the second image in the paper travel direction, because paper length becomes a little shorter after fusing the first image. The second image is transferred on the copy paper before paper returns to normal length as it does under normal condition.

This adjustment is not to make vertical magnification accurate, but to make the first and the second images fit, especially in overlay mode.

Since copies cannot be made in this SP mode, turn the main switch off and on, and make a copy to check the results of the adjustment.

SP45: Duplex Magnification

0	1	2	3	4	5	6	7	8	9	10
+0.4%	No Correction	+0.2%	+0.6%	+0.8%	+1.0%	+1.2%	+1.4%	+1.6%	+1.8%	+2.0%

9.16 LEAD EDGE REGISTRATION ADJUSTMENT (SP42)

- When: If lead edge registration is not within the adjustment standard.
- Purpose: To maintain a proper lead edge registration.
- Adjustment standard: 0 ±2 mm (0 ±0.08")
- How: SP42 changes the registration roller start timing.

SP42: Registration
0 - 15 (8 = default, -- 4.0 mm to +3.5 mm), 0.5 mm per step

9.17 LEAD EDGE ERASE MARGIN ADJUSTMENT (SP41)

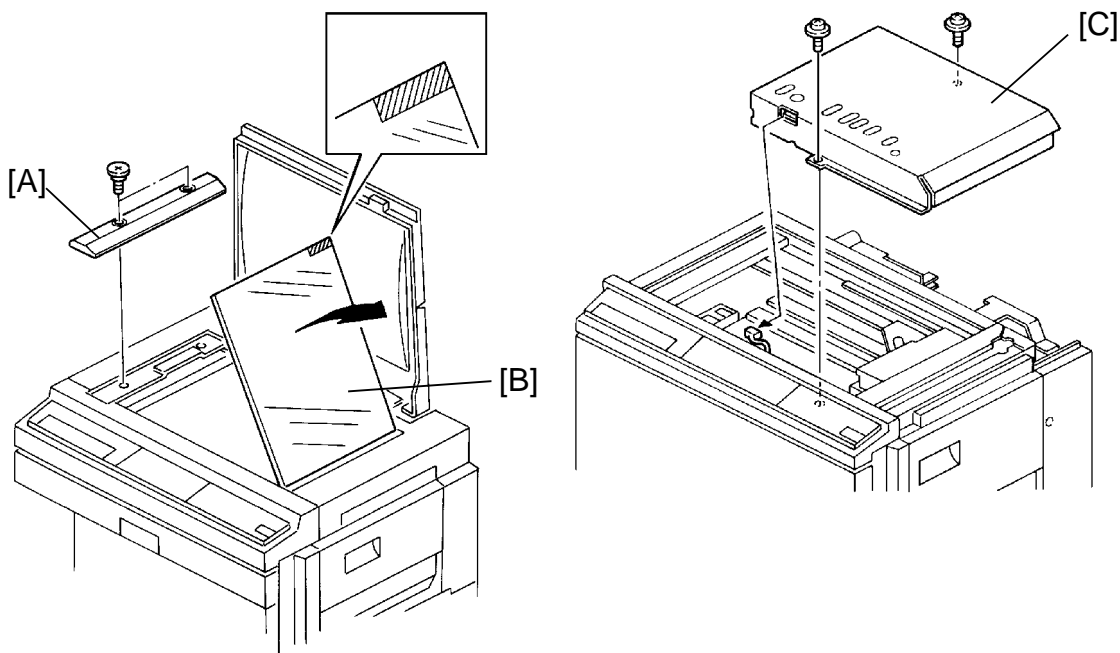
- When: If lead edge erase margin is not within the adjustment standard.
- Purpose: To maintain a proper lead edge erase margin.
- Adjustment Standard: 2.5 ± 1.5 mm (0.1 ± 0.06 ")
- How: SP41 changes the erase lamp off timing.

SP41: Lead Edge Erase
0 - 15 (8 = default, -- 4.0 mm to +3.5 mm), 0.5 mm per step

9.18 SIDE-TO-SIDE REGISTRATION ADJUSTMENT

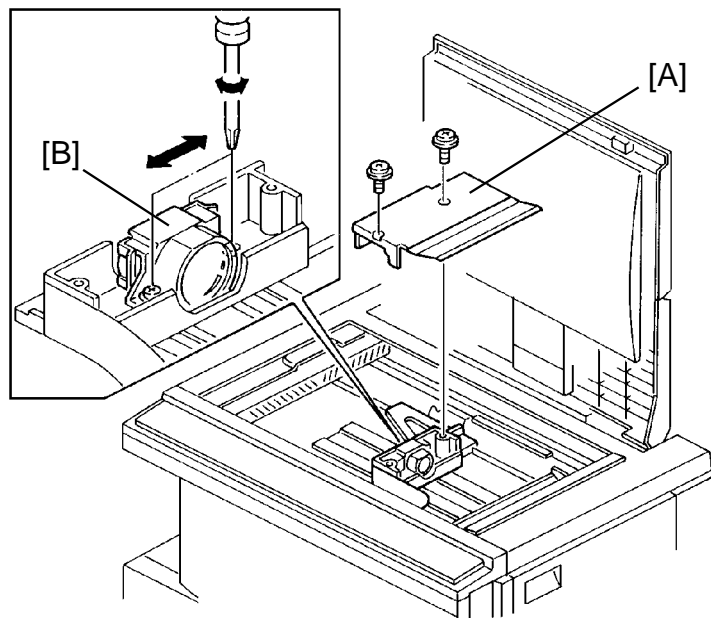
9.18.1 Lens Position Adjustment

- When:** If side-to-side registration is not within the adjustment standard, and image shift direction (to the front or to the rear) is the same from every paper feeding stations.
- Purpose:** To maintain proper side to side registration from every feeding stations.
- Adjustment standard:** $0 \pm 2 \text{ mm}$ ($0 \pm 0.08''$)
- How:** Change the lens position perpendicular to the paper travel direction. This will shift the image on the drum perpendicular to the paper travel direction.



1. Turn off the main switch.
2. Remove the left scale [A] (2 stepped screws) and the exposure glass [B].
3. Remove the lens cover [C] (2 screws and 1 connector)

NOTE: Be careful not to damage the exposure lamp harness.



4. Remove the small lens cover [A] (2 screws).
5. Mark the original position of the lens assembly on the lens bracket.
6. Loosen the 2 screws, shift the lens assembly [B] according to the following rule, and tighten the screws.

If the image is shifted to the rear:	shift the lens assembly to the front.
If the image is shifted to the front:	shift the lens assembly to the rear.
7. Place the exposure glass and turn on the main switch.
8. Make a copy and check the results of the adjustment.
9. If the adjustment is still not correct shift the lens position again.

CAUTION: Be sure that the main switch is off when adjusting.

10. Reassemble the copier.

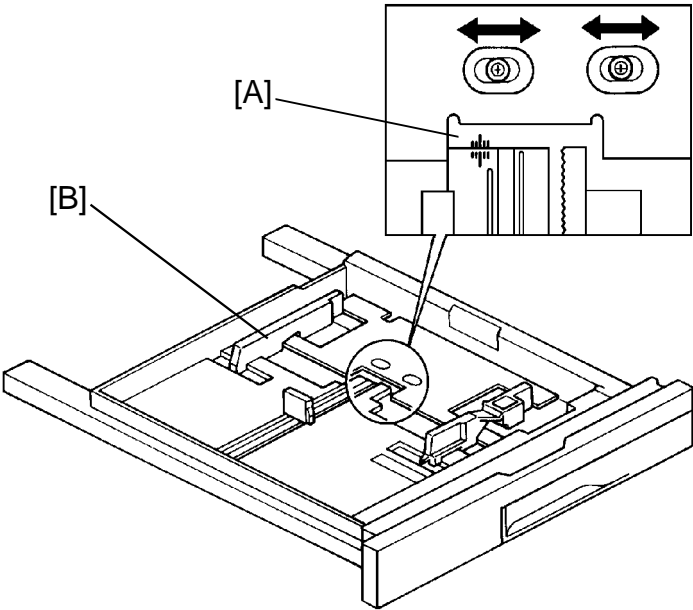
9.18.2Tray Side Fence Adjustment

When: If side-to-side registration on copies fed from a paper tray is not within the adjustment standard.

Purpose: To maintain proper side to side registration from a paper tray.

Adjustment standard: 0 ±2 mm (0 ±0.08")

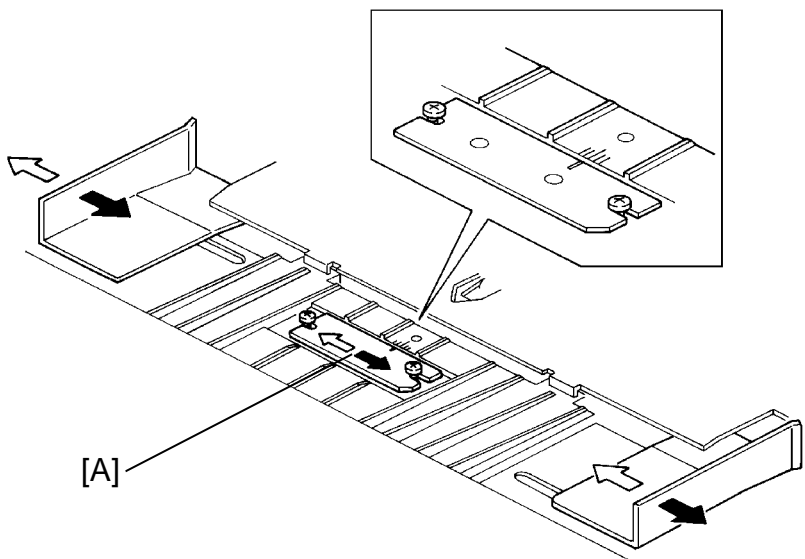
How: Change the side fence position perpendicular to the paper travel direction. This will shift the paper position in a paper tray perpendicular to the paper travel direction.



- 1. Pull the paper tray out.
- 2. Move the side fences to B4/81/2" x 11" paper size position to access the fixing screws through the holes of the bottom plate.
- 3. Loosen the 2 screws fixing the side fence positioning plate [A].
- 4. Move the rear side fence [B] to the desired position and tighten the screws.

9.18.3 Duplex Tray Side Fence Adjustment

When:	If side-to-side registration of the second image in multiple 2-sided copying mode is not within the adjustment standard.
Purpose:	To maintain proper side to side registration of the second image in 2-sided copying mode.
Adjustment standard:	0 ±2 mm (0 ± 0.08")
How:	Change the duplex side fence position perpendicular to the paper travel direction. This will shift the paper position in a duplex tray perpendicular to the paper travel direction.

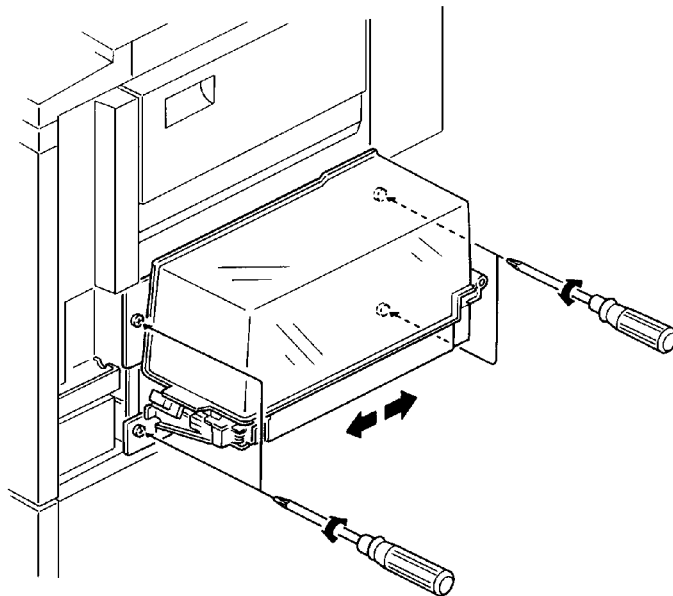


NOTE: This adjustment is not effective for copies in single 2-sided copying mode and overlay mode.

1. Pull the duplex tray out, and lift up the upper and lower paper guide plates.
2. Loosen the 2 screws fixing the side fence positioning plate [A].
3. Move the side fence positioning plate to the desired position and tighten the screws.

9.18.4 LCT Side to Side Registration Adjustment

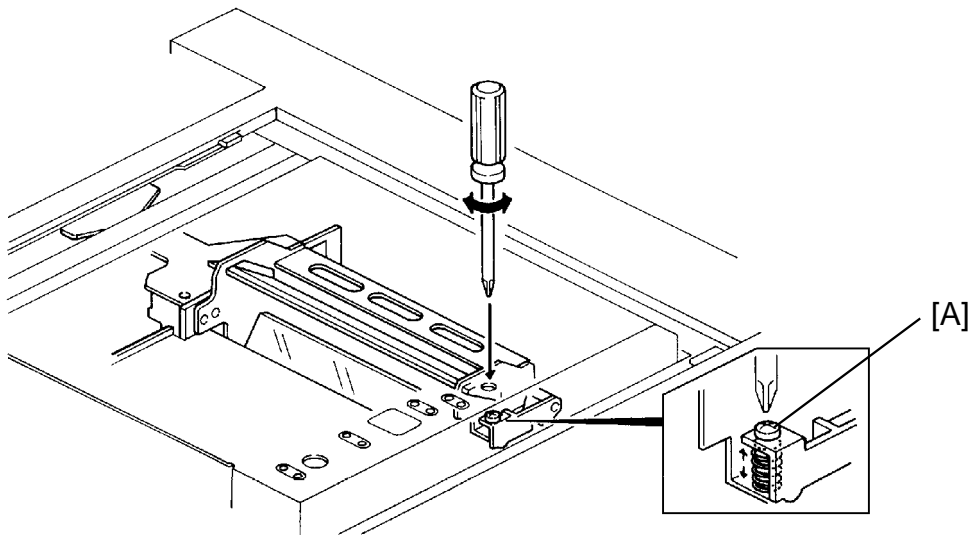
- When:** If side-to-side registration on copies fed from the large capacity tray is not within the adjustment standard
- Purpose:** To maintain proper side to side registration from the large capacity tray.
- Adjustment standard:** $0 \pm 2 \text{ mm}$ ($0 \pm 0.08''$)
- How:** Change the LCT unit fixing position perpendicular to the paper travel direction. This will shift the paper position perpendicular to the paper travel direction.



1. Remove the following covers:
LCT front cover, LCT rear cover, right front lower cover, and right rear lower cover
2. Loosen the 4 screws fixing the LCT unit to the copier frame.
3. Move the whole LCT unit to the desired position and tighten the screws.
4. Reinstall the covers.

9.19 3RD SCANNER HEIGHT ADJUSTMENT

When:	If skewed images appear after adjusting the 1st and 2nd scanner positions.
Purpose:	To maintain proper copy image.
How:	Turn the 3rd scanner height adjustment screw. This changes the 3rd scanner's height.



CAUTION: Never perform this adjustment unless you have positively verified that the source of the skewing of image is optical and not in the paper path.

1. Turn off the main switch and remove the exposure glass.
2. Adjust the 3rd scanner's height by turning the adjusting screw [A].

**9.20 OVERLAP/WHITE MARGIN SELECTION IN
OVERLAY MODE (SP24)**

- When: If a customer wants a white frame on the border line when using "Black-in area" and "Color-in area" mode. (This is applied only when the editor is installed.)
- Purpose: To satisfy the customer's requirement.
- How: SP24 change the ON number of LED blocks of the edit erase lamp unit and the ON timing for the first and second image in "Black-in area" and "Color-in area" mode.

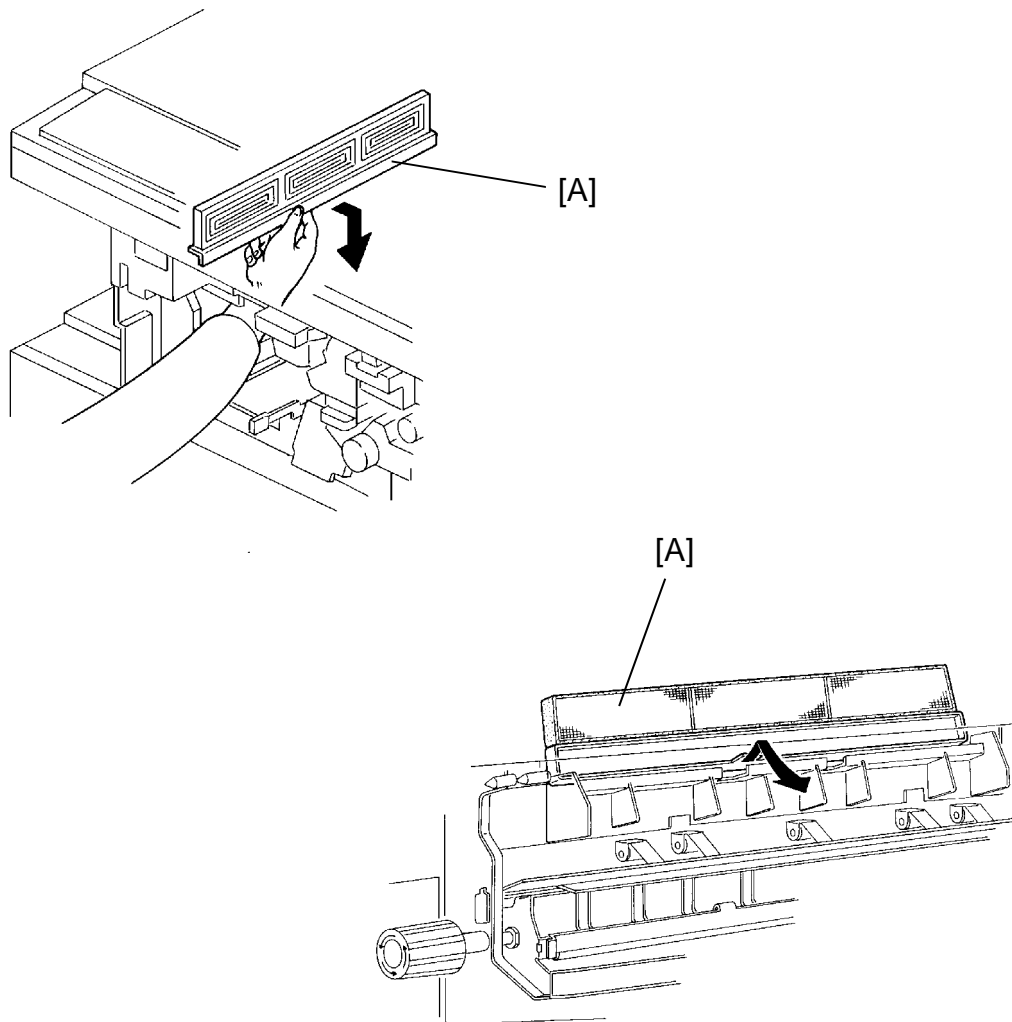
NOTE: The normal setting is no white frame on the border line. Color and black images may overlap by 5 mm at most because of side to side image shift between the first and second images.

- SP24: Overlay Border Erase**
0: NO (No border erase)
1: YES (Border erase)

10. OTHERS

10.1 OZONE FILTER REPLACEMENT

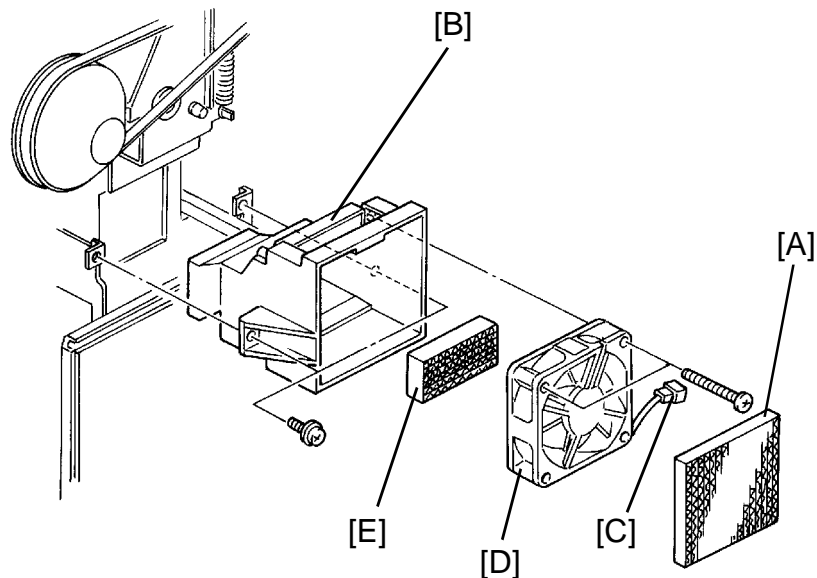
10.1.1 Fusing Exhaust Fan Filter



1. Turn off the main switch.
2. Open the front door and remove the fusing unit.
3. While holding up the ozone filter [A] slightly slide it out as shown.
4. Replace the ozone filter.

NOTE: The PM interval of this ceramic ozone filter is 400K copies.

10.1.2 Exhaust Fan Filters



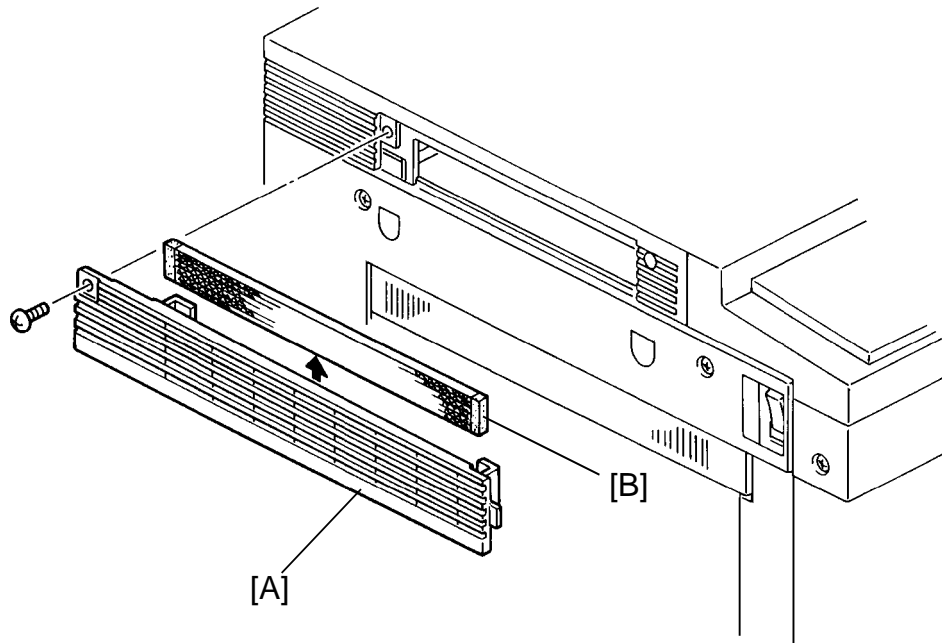
[The paper type ozone filter has been eliminated from production for all FT5433/5733 copiers manufactured after Serial Numbers A303210xxxx and A3042100000 respectively since the ceramic type ozone filter will maintain the required ozone level.]

1. Turn off the main switch.
2. Remove the rear cover.
3. Swing out the dc power supply board.
4. Unhook the high voltage cables from the vacuum fan bracket [B] and disconnect the vacuum fan harness [C] (1 connector).
5. Remove the vacuum fan bracket (2 screws).
6. Remove the vacuum fan [D] (2 screws).
7. Replace the ozone filter [E].

NOTE: The PM interval of this ceramic ozone filter is 400K copies.

8. Reinstall the vacuum fan and install the new ozone filter.

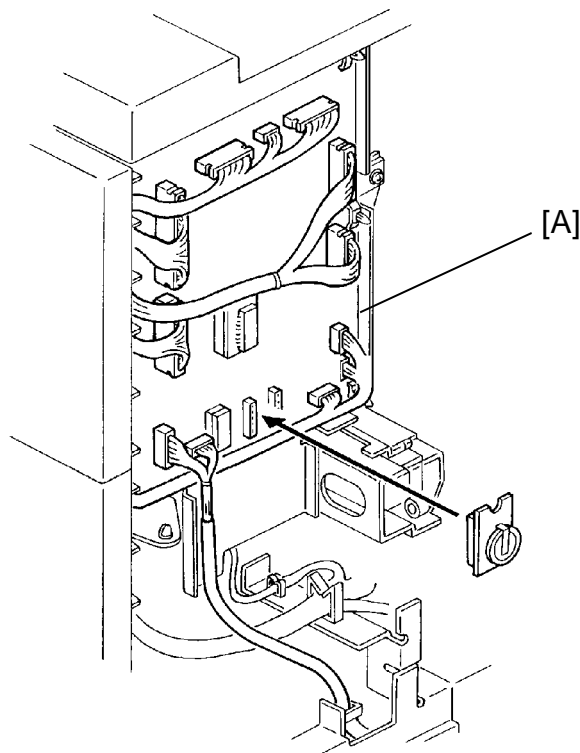
10.1.3 Optics Cooling Fan Filter



1. Remove the optics left cover [A] (1 screw).
2. Replace the ozone filter [B].

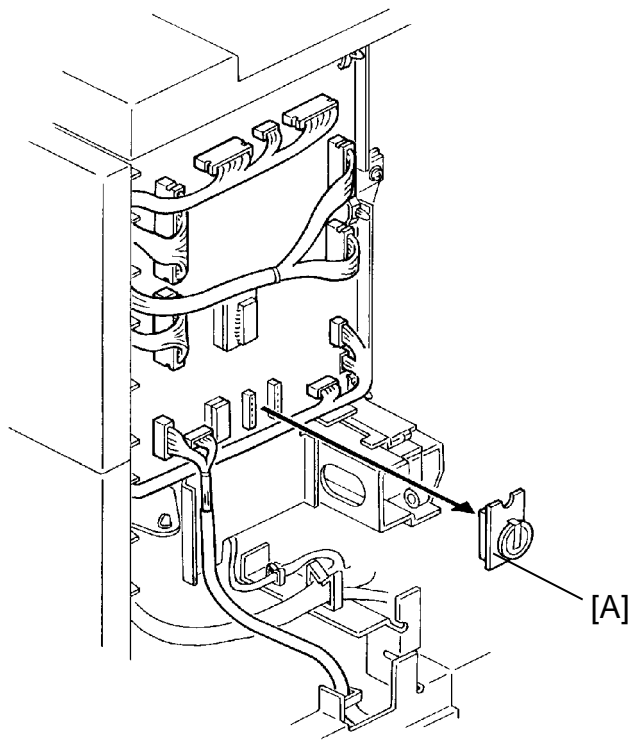
NOTE: The PM interval of this paper ozone filter is 80 k copies.

10.2 MAIN CONTROL BOARD REPLACEMENT



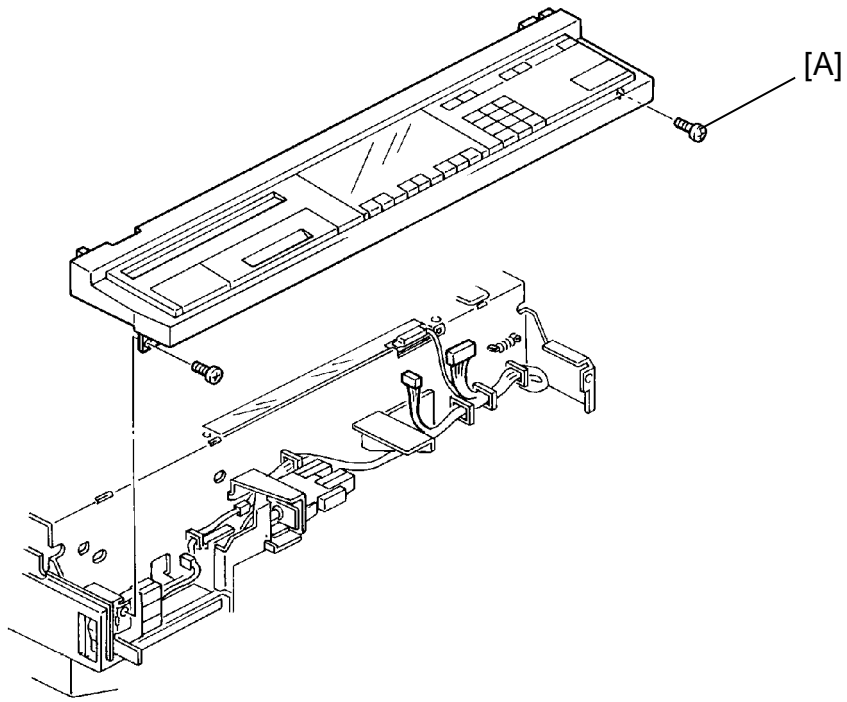
1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Disconnect the harnesses (11 connectors) from the main control board [A].
4. Replace the main control board (6 locking supports).
5. Remove the RAM board from the old main control board and install it on the new board.

10.3 RAM BOARD REPLACEMENT



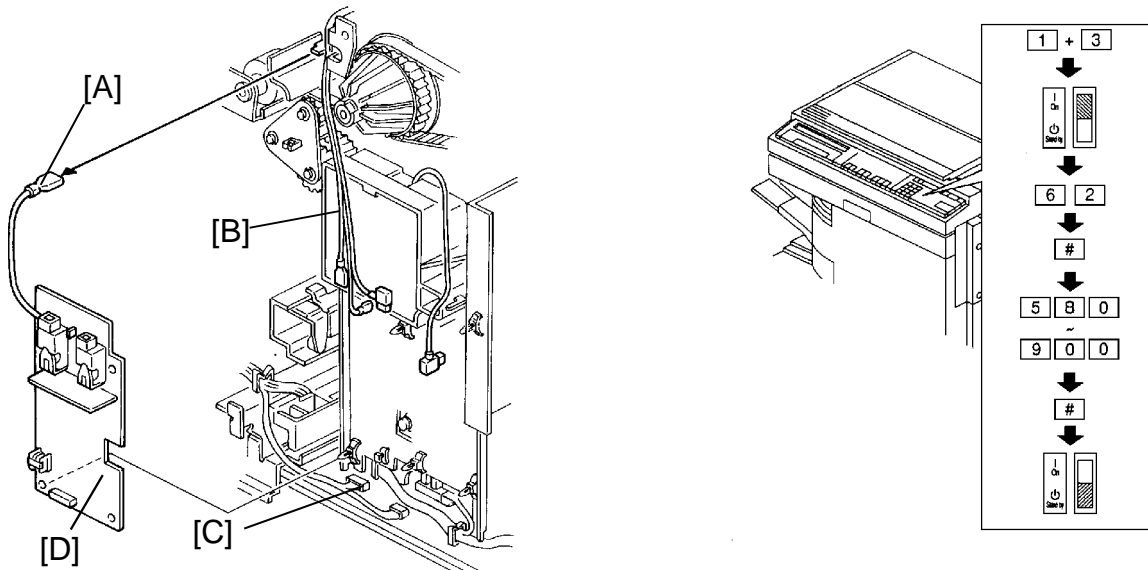
1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Replace the RAM board [A].
4. Reassemble the copier and plug it in.
5. Perform the memory all clear (SP99) and follow the necessary procedure (see Memory All Clear Procedure in Service Program Mode of Service Table section).

10.4 OPERATION PANEL REMOVAL



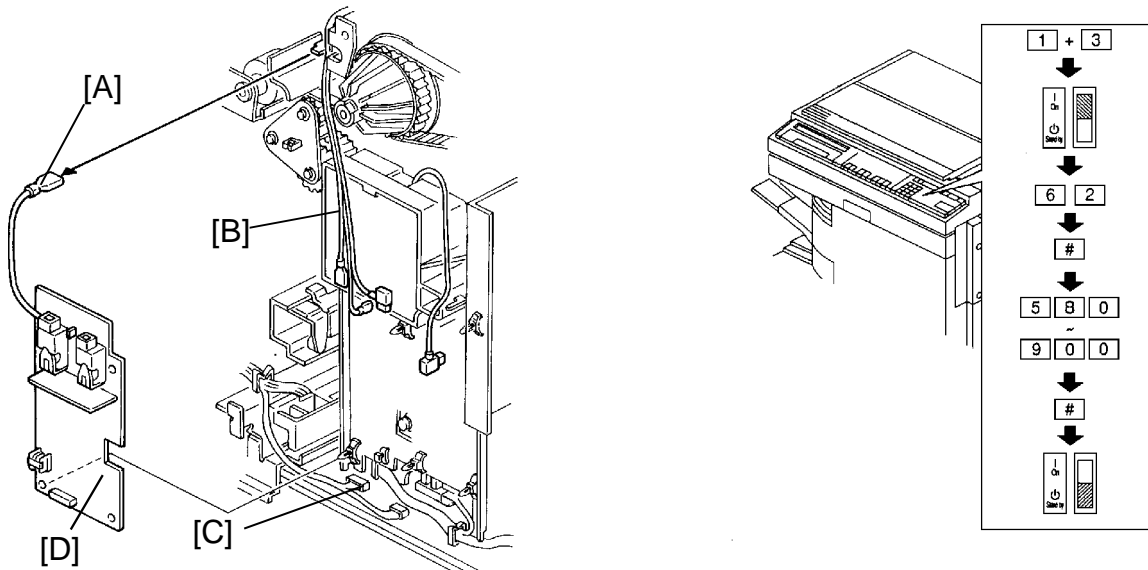
1. Turn off the main switch.
2. Remove the front door and the upper front cover.
3. Remove the operation panel [A] (4 screws, 2 connectors).

10.5 HIGH VOLTAGE SUPPLY BOARD - CTBG REPLACEMENT



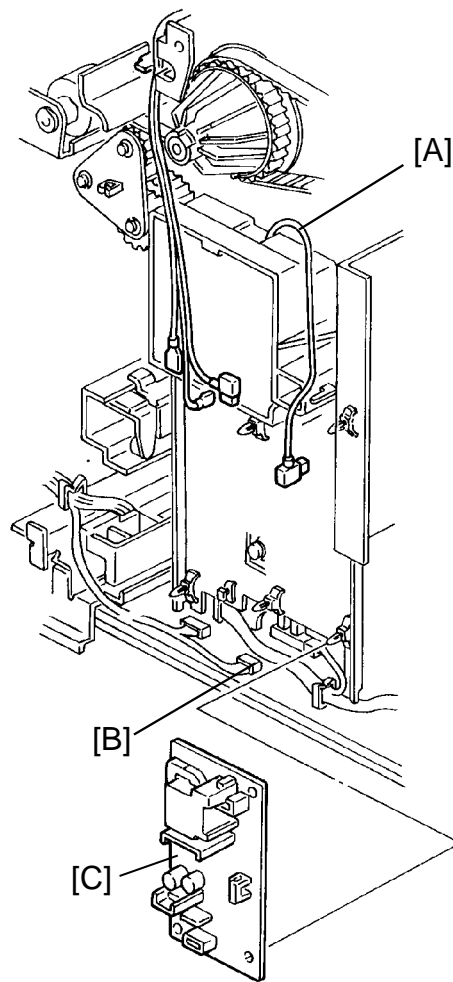
1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Swing out the main control board assembly (1 screw).
4. Disconnect the bias cable [A] (1 connector, 1 harness lamp).
5. Disconnect the 3 high-voltage cables [B] and a harness [C].
6. Replace the CTBG power pack [D] (3 locking supports).
7. Reassemble the machine.
8. Plug in the power cord.
9. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.
10. Enter "62" (grid voltage setting mode) using the number keys and press the enter key.
11. Enter the new grid voltage correction data labeled on the board using the number keys and press the enter key.
12. Adjust the transfer corona current.
 (See T/S corona current auto adjustment.)
13. Enter the factory set data for the separation corona current by SP163 and SP164 if the high voltage supply board – D is the original one.

10.5 HIGH VOLTAGE SUPPLY BOARD - CTBG REPLACEMENT



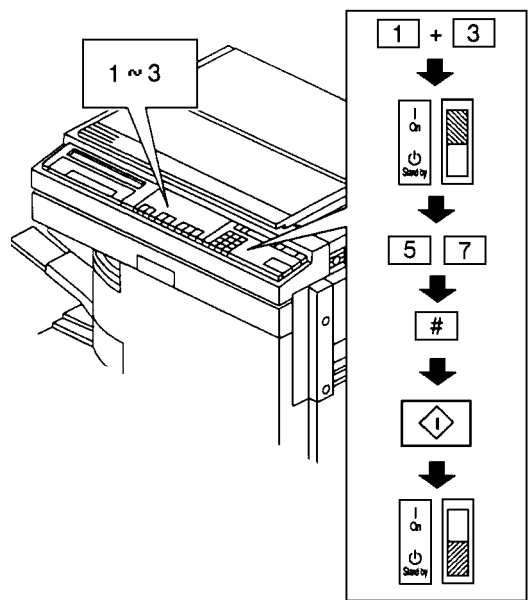
1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Swing out the main control board assembly (1 screw).
4. Disconnect the bias cable [A] (1 connector, 1 harness lamp).
5. Disconnect the 3 high-voltage cables [B] and a harness [C].
6. Replace the CTBG power pack [D] (3 locking supports).
7. Reassemble the machine.
8. Plug in the power cord.
9. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.
10. Enter "62" (grid voltage setting mode) using the number keys and press the enter key.
11. Enter the new grid voltage correction data labeled on the board using the number keys and press the enter key.
12. Adjust the transfer corona current.
 (See T/S corona current auto adjustment.)
13. Enter the factory set data for the separation corona current by SP163 and SP164 if the high voltage supply board – D is the original one.

10.6 HIGH VOLTAGE SUPPLY BOARD – D REPLACEMENT



1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Disconnect the high-voltage cable [A] and a harness [B] (2 connectors).
4. Replace the high voltage supply board -- D [C] (3 locking supports).
5. Adjust the separation corona current.
(See T/S corona current auto adjustment.)
6. Enter the factory set data for the transfer corona current by SP162 if the high voltage supply board - CTBG is the original one.

10.7 T/S CORONA CURRENT AUTO ADJUSTMENT (SP57)



- NOTE:**
- 1. Setting data of SP62 must be done, before performing the T/S corona current auto adjustment.
 - 2. Adjust the corona current only when a high voltage supply board is replaced.
 - 3. When adjusting the corona current, the drum and T/S corona wires must be replaced with new ones and the T/S corona unit must be cleaned.

- 1. While pressing both "1" and "3" on the operation panel number keys turn on the main switch in order to access the SP mode.

NOTE: Release the number keys after confirming that the Call Service indicator and the copy counter number "0" are blinking.

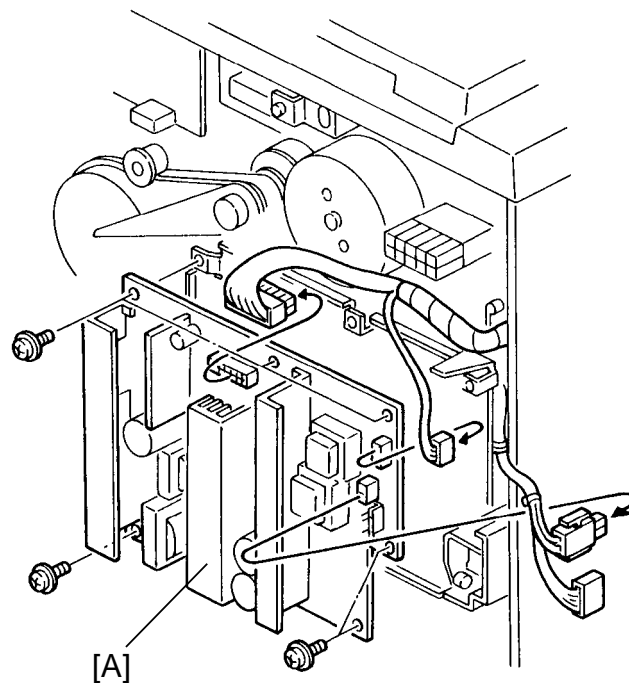
- 2. Enter "57" (Auto drum current adjustment) using the number keys and press the enter key.
- 3. Press the start key. The adjustment condition will be displayed with the following data in the magnification three digit indicator.

Data	Condition
1	Measuring and adjusting the transfer corona current
2	Measuring and adjusting the separation corona current
3	Finish the T/S corona current adjustment

(The copier starts the adjustment, this lasts about 10~20 seconds, and the beeper sounds twice when it is finished.)

- 4. Turn the main switch off.

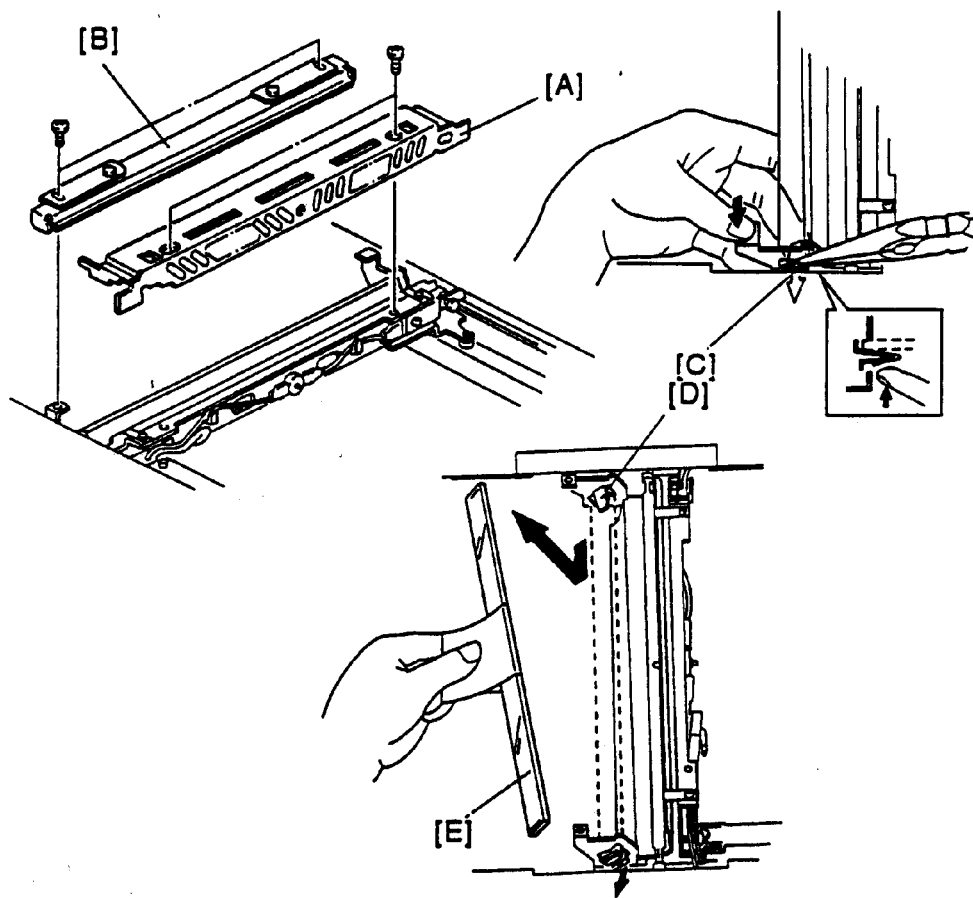
10.8 DC POWER SUPPLY BOARD REPLACEMENT



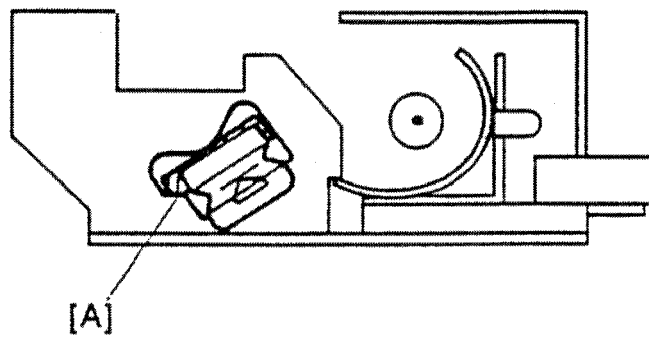
- NOTE:**
1. Check the fuses (F1, F2, F3, and F4) on the board before determining that the dc power supply board is defective.
 2. When checking if the dc power supply board is defective or not by installing the board on another machine, wait for 10 minutes before turning on the main switch. Because if the over voltage protection circuit functions, the dc power supply board cuts its output and it takes a maximum of 10 minutes to recover by discharging the capacitors.

1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Remove the dc power supply board [A] (5 screws and 4 connectors).

10.9 1ST MIRROR REMOVAL



1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Slide the first scanner 150mm to the right.
4. Remove the reflector cover [A] (2 screws).
5. Remove the sub-reflector cover [B] (2 screws).
6. With your thumb, press down on the 1st scanner as shown to hold it in place. Then, while holding down the scanner, press up on the front spring plate [C] with another finger and remove the plate with a pair of pliers. Leave the rear spring plate [D] in position in the rear side plate cutout.



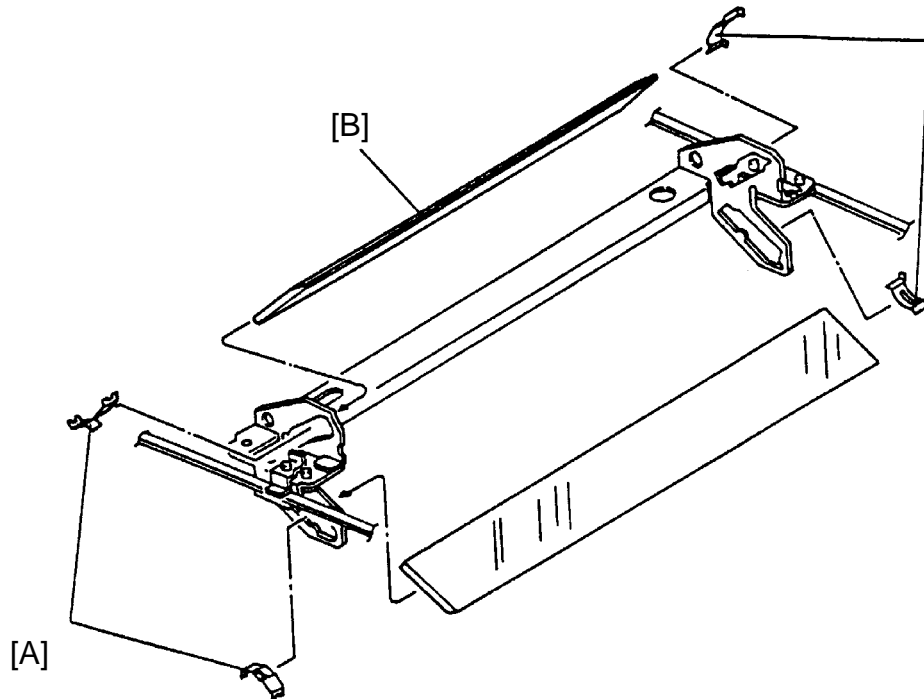
- To install -

1. Insert the 1st mirror into the front side plate cutout. Then insert the rear side of the mirror into the rear spring plate.

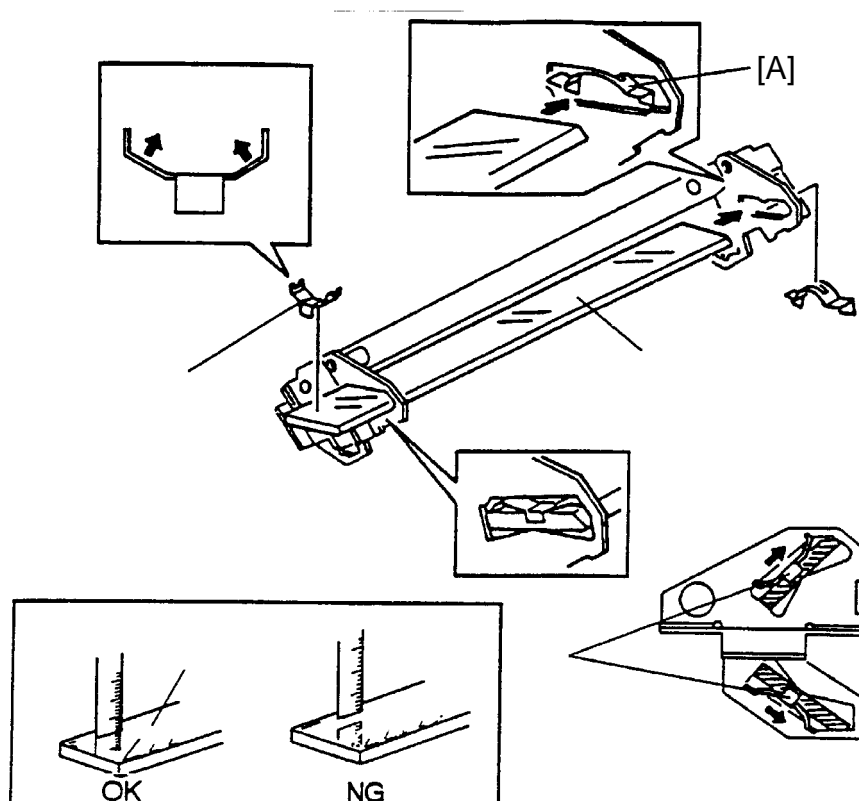
NOTE: Make sure when installing the mirror that the reflecting surface is on the upper side and the beveled edge [A] of the mirror is on the lower side.

2. Insert the front spring plate between the mirror and the front side plate cutout.

10.10 2ND AND 3RD MIRROR REMOVAL



1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal)
3. Slide the 1st scanner half of the way to the right.
4. Press down on one side of the front spring plate [A] and pull it off the end of the mirror.
5. Carefully shift the 2nd mirror [B] towards the front of the machine to remove the rear spring plate [C].
6. Lift the mirror out of the machine rear side first.



- To install -

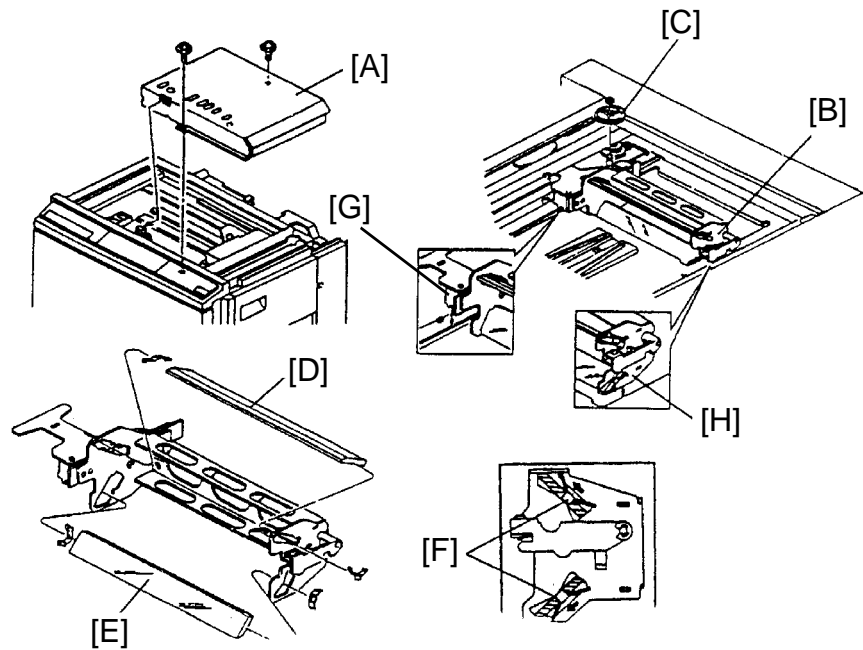
1. Hold the rear spring plate [A] in position as shown.
2. Insert the 2nd mirror [B] into the front side plate cutout.
3. Position the rear end of the mirror under the rear spring plate in the rear side plate cutout.
4. Fit the front spring plate [C] over the front end of the mirror. Make sure that the slot on each arm of the spring plate fits over the edge of the cutout as shown.

NOTE: a) Make sure when installing the mirrors that the reflecting surfaces [D] face the lens.

b) The front and rear spring plates are different. Make sure that each plate is placed in the correct position.

c) Position the spring plate [E] by moving it in the direction of the arrow.

10.11 4TH AND 5TH MIRROR REPLACEMENT



1. Turn off the main switch.
2. Remove the exposure glass (see Exposure Glass Removal.)
3. Remove the lens cover [A] (2 screws and 1 connector).
4. Slide the 3rd scanner [B] all the way to the left.
5. Remove the 3rd scanner drive Gear [C] (1E-ring).
6. Remove the 3rd scanner assembly.
7. Replace the 4th [D] and 5th[E] mirrors. (The procedure for removing the mirrors from their brackets is the same as with the 2nd and 3rd mirrors).

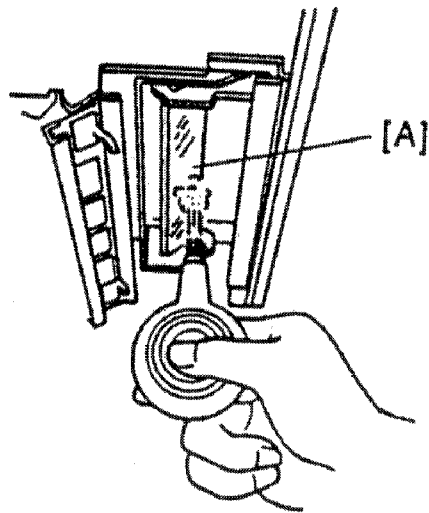
NOTE: a) Make sure that the mirrors are installed in their original positions. (The 4th mirror is larger than the 5th mirror.)

b) The front and rear spring plates are different. Be sure to mount them in the correct positions.

c) Position the spring plates [F] as shown. Move them in the direction of the arrow.

d) When reinstalling the 3rd scanner, make sure that the hooks [G and H] are properly positioned as shown.

10.12 6TH MIRROR CLEANING



1. Turn off the mainswitch.
2. Remove the following units.
 - The development units (black and color)
 - The main corona unit
 - The cleaning unit
 - The drum unit
3. Clean the 6th mirror [A] with a blower brush as shown.

SECTION 6

TROUBLESHOOTING

1. INTRODUCTION

This troubleshooting guide is compiled to help field engineers solve some of the more common field problems. However, it does not cover all the potential problems. We request your help in improving our troubleshooting documentation. Whenever you encounter new field problems, please submit detailed reports to the nearest service support office. We will then issue additional troubleshooting information based on reports from you and other field service engineers around the world.

- 1. The following is a comparison table showing the area you should check first if you have image problems at periodic intervals.

Interval of Image Problem	Possible Cause
251mm/9.89"	Drum
125.5mm/4.94"	Hot roller or Pressure Roller

- 2. If the problem is related to electrical circuit boards, first disconnect, then reconnect the connectors before replacing the PCBs. (In case of the dc power supply board, refer to NOTE in the replacement procedure.)

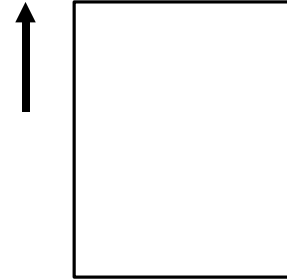
2. COPY QUALITY

2.1 BLANK COPY (WHITE COPY)

- Phenomenon -

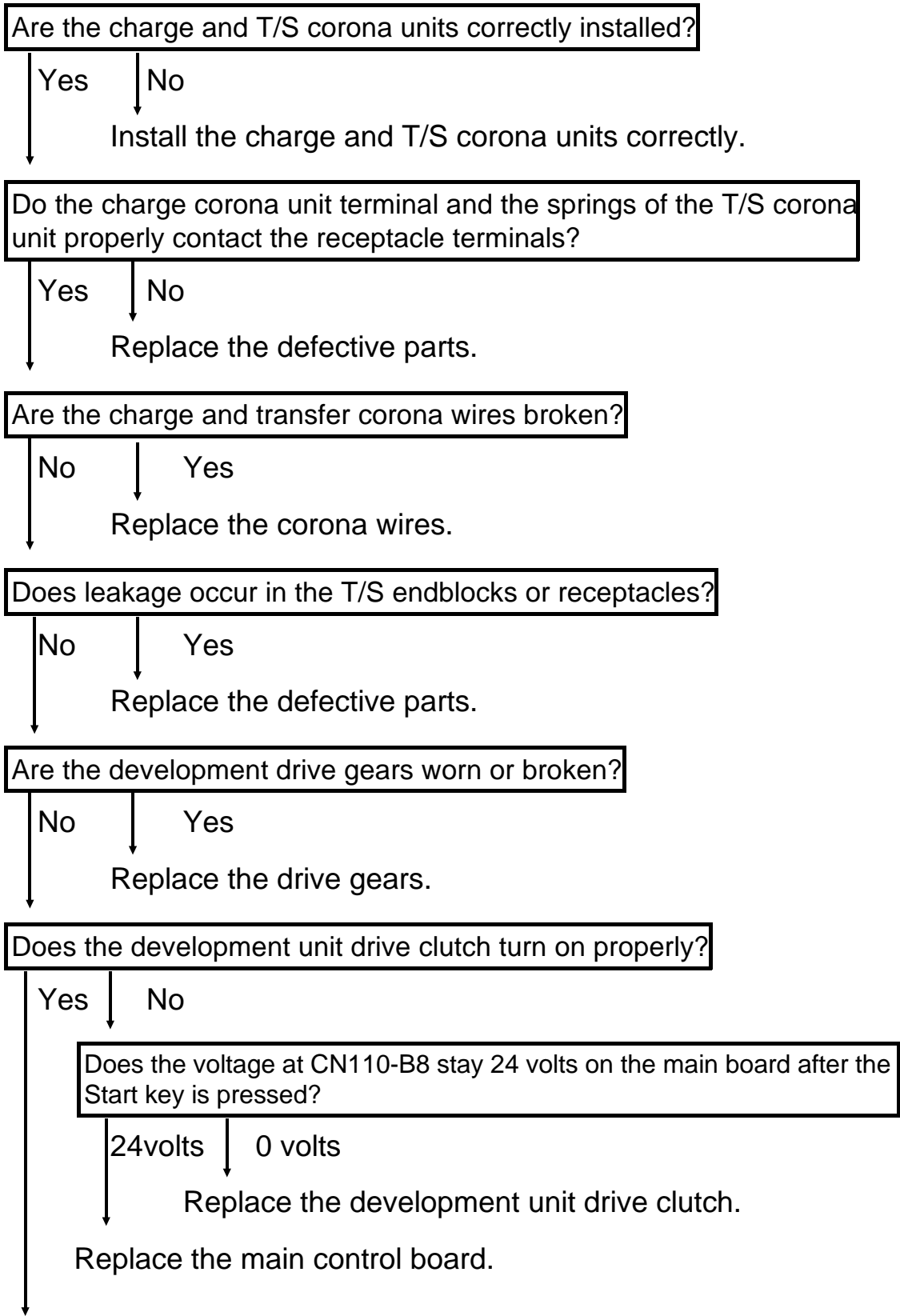
White or almost white copy.

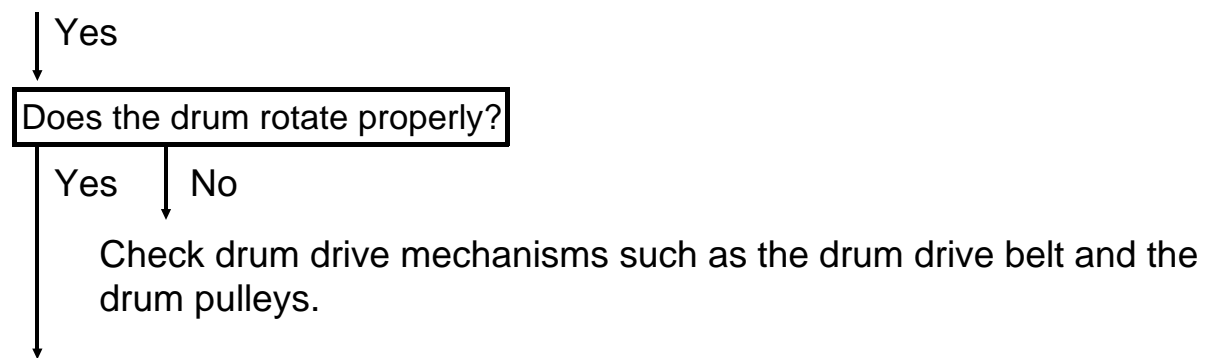
- Possible Causes -



1. Charge is not applied.
 - High voltage supply board - CTBG (charge or grid) failure
 - Poor contact of high voltage lead wires
 - Broken charge corona wire
 - Leak in insulator or endblock
2. Copy image is not transferred to the paper.
 - High voltage supply board - CTBG (transfer) failure
 - Poor contact of high voltage lead wires
 - Poor contact of transfer corona wire
 - broken transfer corona wire
 - Leak in insulator or endblocks
3. Development roller does not rotate.
 - Broken drive gears
 - Defective development unit drive clutch
4. Poor drum sensitivity.
 - Drum exposed to fluorescent light or direct sunlight for long period of time.
 - Drum exposed to ammonia gas or fumes for a long period of time.
5. Drum does not rotate.

- Action -





Check the following points:

- CN103-4 (Charge/grid trigger line)
 - (1) If the signal stays HIGH after the Start key is pressed, replace the main control board.
 - (2) If the charge corona does not turn on even if the signal changes to LOW, replace the high voltage supply board - CTBG.
- CN103-2 (Transfer trigger line)
 - (1) If the signal stays HIGH after the Start key is pressed, replace the main control board.
 - (2) If the transfer corona does not turn on even if the signal changes to LOW, replace the high voltage supply board - CTBG.

If there is no problem with the signal lines, replace the drum if the sensitivity does not recover even when the drum is not exposed to light.

2.2 DIRTY BACKGROUND

- Phenomenon -

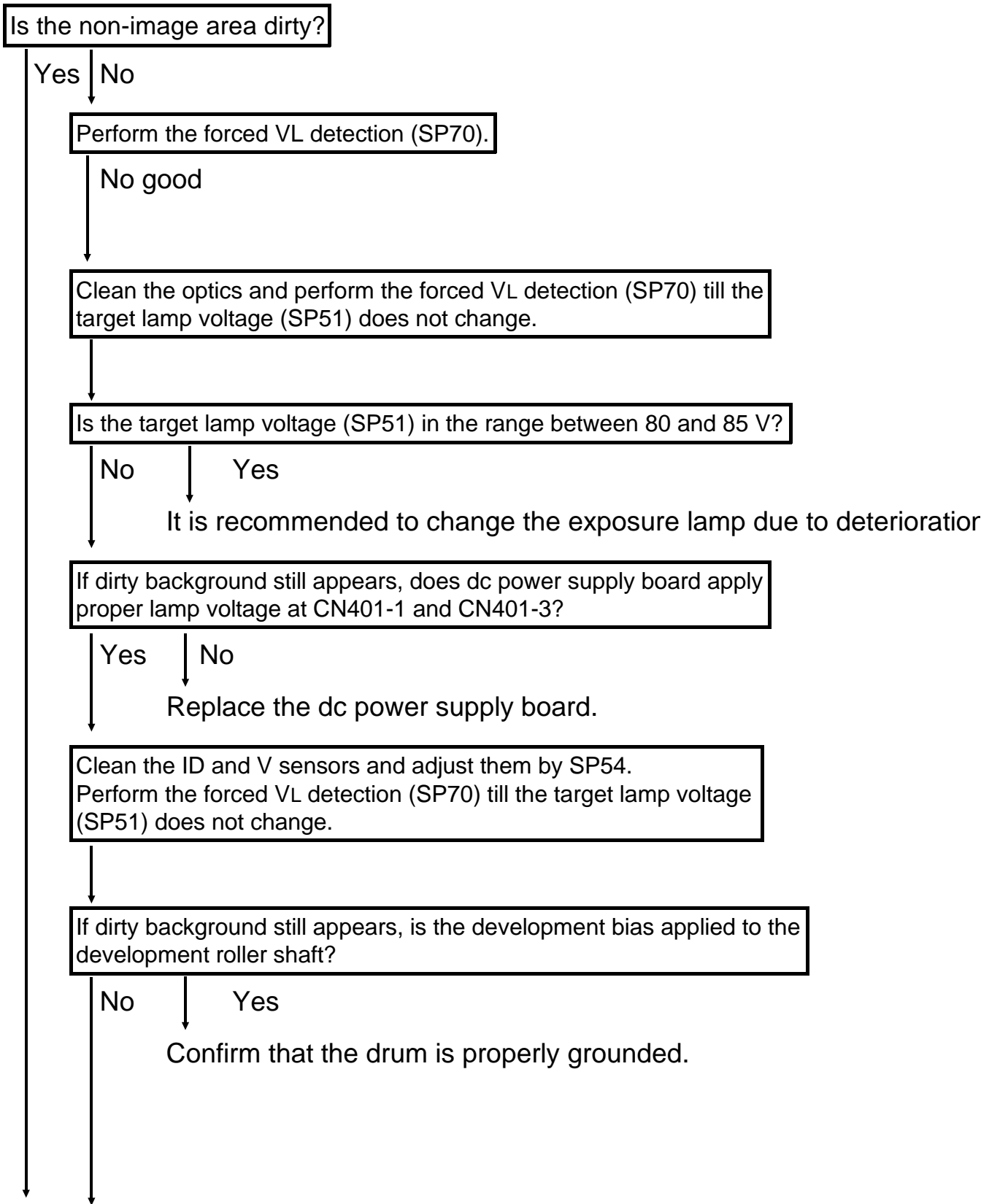
1. Dirty background at image density level 4 (manual setting).
2. ADS copies have a dirty background.

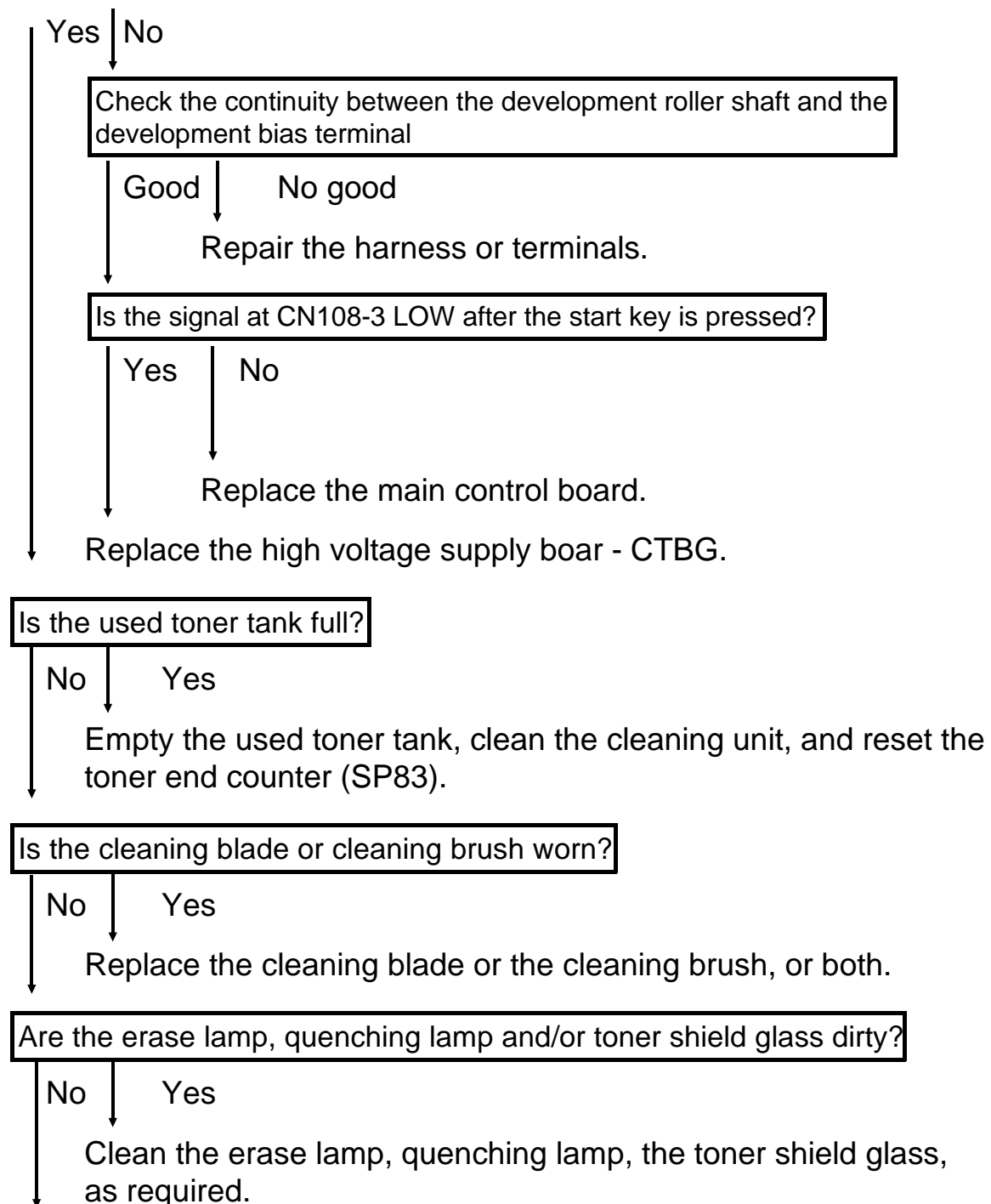
- Possible Causes -

1. VL correction failure
 - Very dirty optics (VL correction cannot compensate).
 - Deteriorated exposure lamp (maximum output cannot give sufficient light intensity).
 - Failure of the dc power supply board.
 - Dirty erase lamp unit.
2. VR correction failure
 - High voltage supply board - CTBG (development bias) failure.
 - Poor contact of development bias.
 - The development bias is grounded.
3. OPC drum is not grounded properly.
4. ADS mode
 - Improper ADS Density setting (SP34).
 - ADS Sensor board failure.
 - High voltage supply board - CTBG failure.
 - Incorrect adjustment of ADS sensor (SP56/SP167).
5. High toner density
 - Improper setting of grid bias correction data (SP62).
 - Improper grid bias setting (SP161).
 - Improper ID sensor pattern bias (SP33/75).
 - Dirty erase lamp unit.

- Action -

Make a copy in reduction mode at manual image density level 4.





If toner scattering occurs, see the toner scattering section.

If dirty background occurs only in ADS mode, do the following:

- If the ADS voltage (SP167) is not within 1.5 ± 0.1 volts standard voltage, readjust the ADS voltage (SP56).
- Change the setting of ADS density (SP34) from 0 (Normal) to 2 (Lighter).

2.3 UNEVEN IMAGE DENSITY

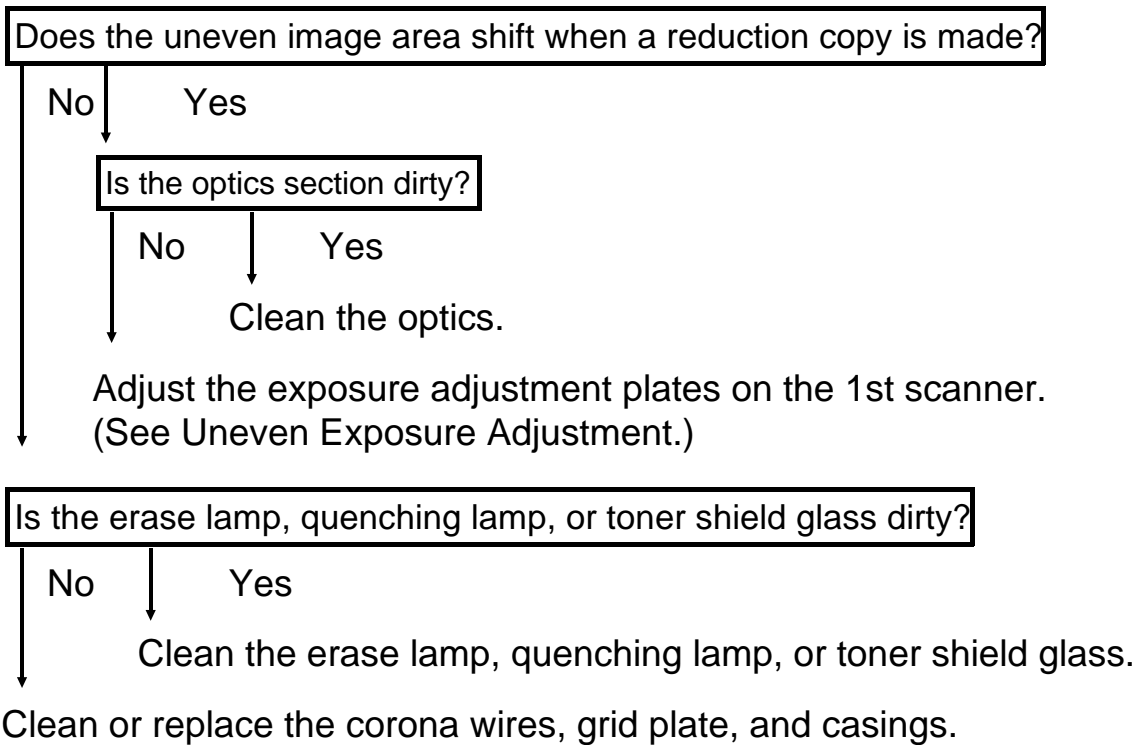
- Phenomenon -

Uneven image density appears on copies.

- Possible Cause -

- 1. Dirty optics
- 2. Improper position of exposure adjustment plates
- 3. Dirty corona wires or grid plate
- 4. Uneven height of charge corona wire
- 5. Improper function of cross mixing in the development unit

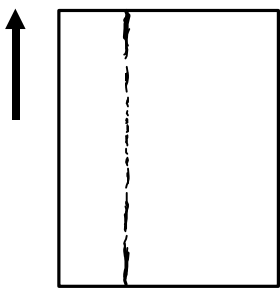
- Action -



2.4 VERTICAL BLACK BANDS

- Phenomenon -

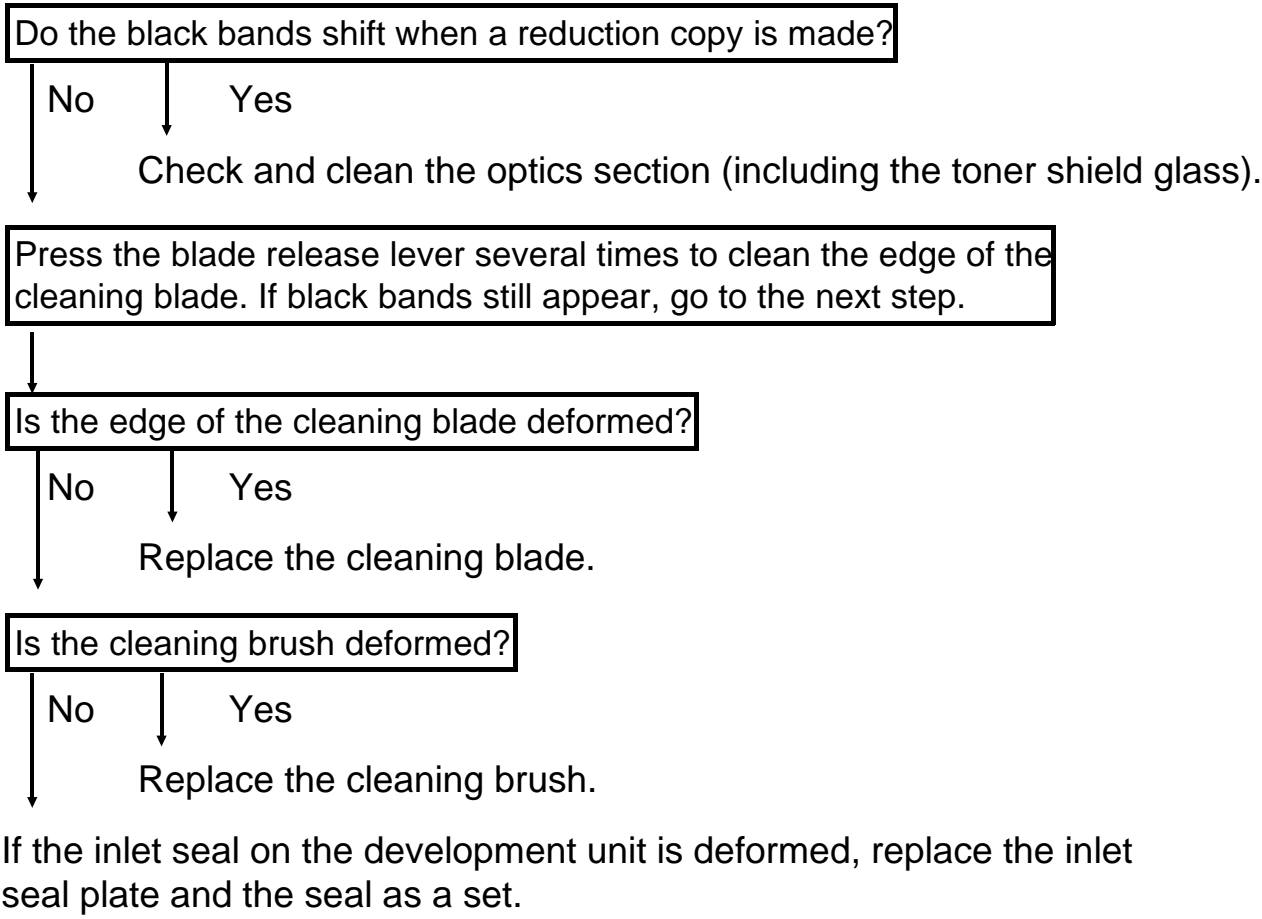
Vertical black bands appear on the copy.



- Possible Causes -

- 1. Dirty optics
- 2. Dust between the cleaning blade and drum
- 3. Edge of the cleaning blade deformed
- 4. Deformed cleaning brush
- 5. Deformed inlet seal on the development unit

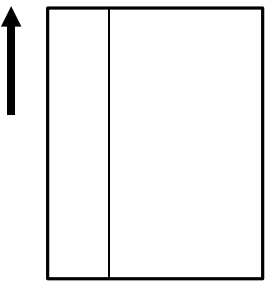
- Action -



2.5 VERTICAL BLACK LINES

- Phenomenon -

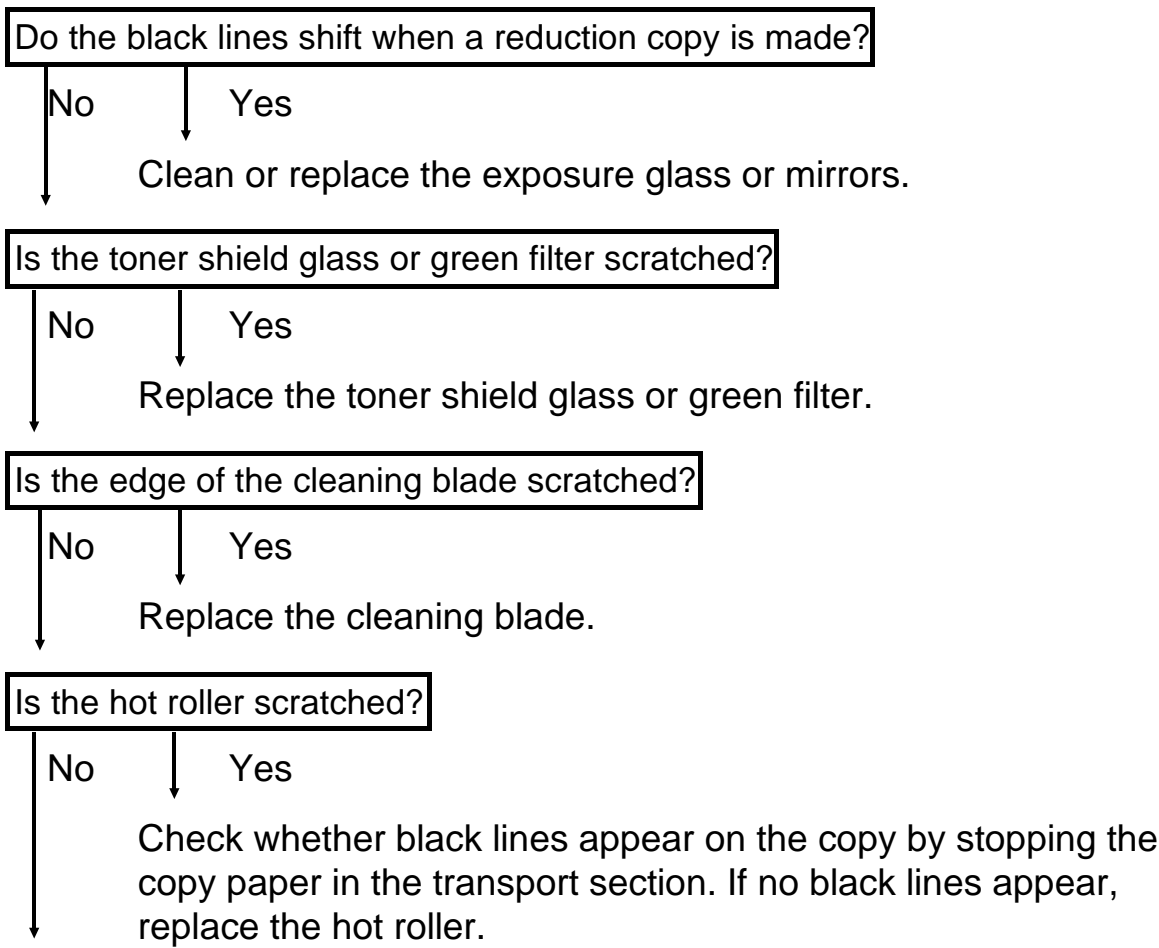
Thin black lines appear on the copy.



- Possible Causes -

- 1. Scratched cleaning blade
- 2. Dirty or scratched mirrors
- 3. Scratched or dirty drum
- 4. Scratched hot roller

- Action -



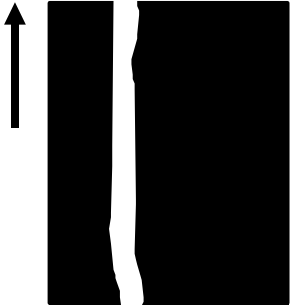
Check whether the drum is scratched or toner is built-up on the drum.

- If toner is built-up on the drum, clean the drum with a dry cloth or wet cotton.
- If the drum is scratched, replace the drum.

2.6 VERTICAL WHITE LINES OR BANDS —1 (DULL OR BLURRED)

- Phenomenon -

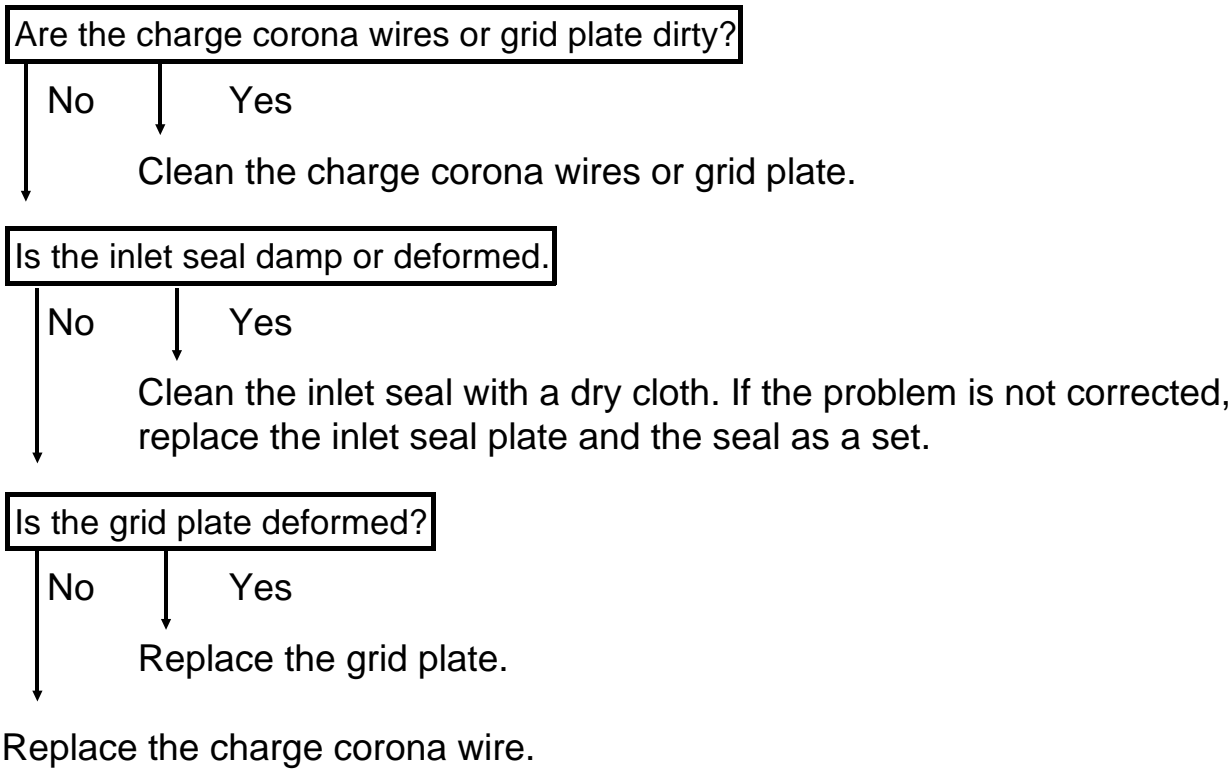
Dull or blurred white lines appear on the copy.



- Possible Causes -

- 1. Dirty or deteriorated charge corona wires
- 2. Dirty or deformed grid plate
- 3. Damp or deformed inlet seal on the development unit

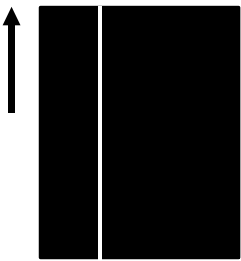
- Action -



2.7 VERTICAL WHITE LINES OR BANDS —2 (THIN, DISTINCT)

- Phenomenon -

Vertical white lines appear on the copy.



- Possible Causes -

- 1. Paper dust on the edge of the cleaning blade
- 2. Scratched drum
- 3. Scratched hot roller

- Action -

Press the cleaning blade release lever several times. Make a copy and if white lines still appear, go to the next step.



Make a copy and stop the machine when the paper reaches the transport section. Do white lines appear on the copy?

No



Yes



Replace the drum if it is scratched.

Replace the hot roller if it is scratched.

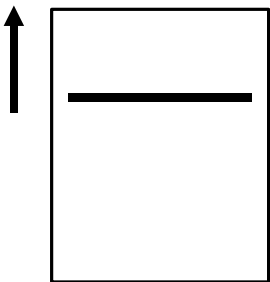
NOTE: If the drum is scratched, find out what caused the scratches on the drum and correct the problem.

- Paper Misfeed
- Incorrect positioning of the pick-off pawls
- Foreign substances on the cleaning brush or blade
- Carrier leakage

2.8 HORIZONTAL BLACK/WHITE LINES

- Phenomenon -

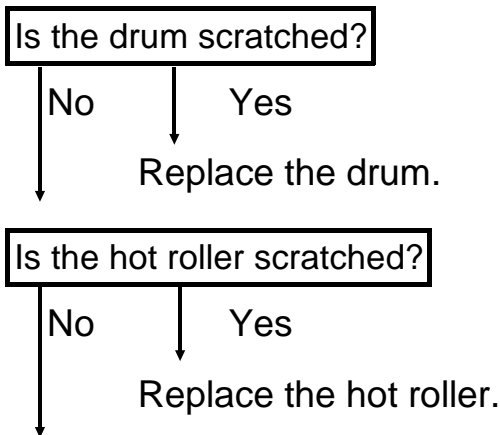
Black or white lines perpendicular to the paper feed direction appear on the copy image.



- Possible Causes -

- 1. Drum is scratched.
If black lines appear at 251 mm (9.89") intervals, the cause is a scratched drum or toner build up.
- 2. Hot roller is scratched.
If black lines appear at 125.5 mm (4.94") intervals, the cause is a scratched hot roller.
- 3. Toner adheres to the drum surface.
Due to insufficient cleaning, foreign matter may accumulate on the blade, causing toner to stick to the drum surface when the drum stops.

- Action -



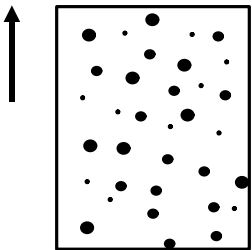
If toner adheres to the drum surface, clean the drum with wet cotton. Also clean or replace the cleaning blade and/or cleaning brush.

2.9 BLACK SPOTS ON THE COPY IMAGE

- Phenomenon -

The grid voltage is not applied correctly.

- Poor contact between the charge corona casing and grid plate
- High voltage supply board - CTBG defective
- Main control board defective



- Action -

Is there good electrical contact between the charge corona casing and the grid plate?

Yes No

Repair the poor contact and replace any parts if needed.

Check the voltage at CN103-4 on the main control board.

0 volt Not 0 volt

Replace the main control board.

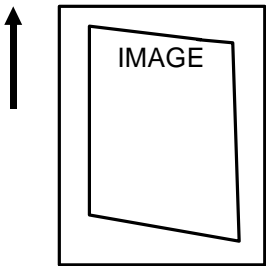
Replace the high voltage supply board - CTBG.

2.10 SKEWED (OPTICAL) COPY IMAGE

- Phenomenon -

The copy image is skewed (parallelogram shape).

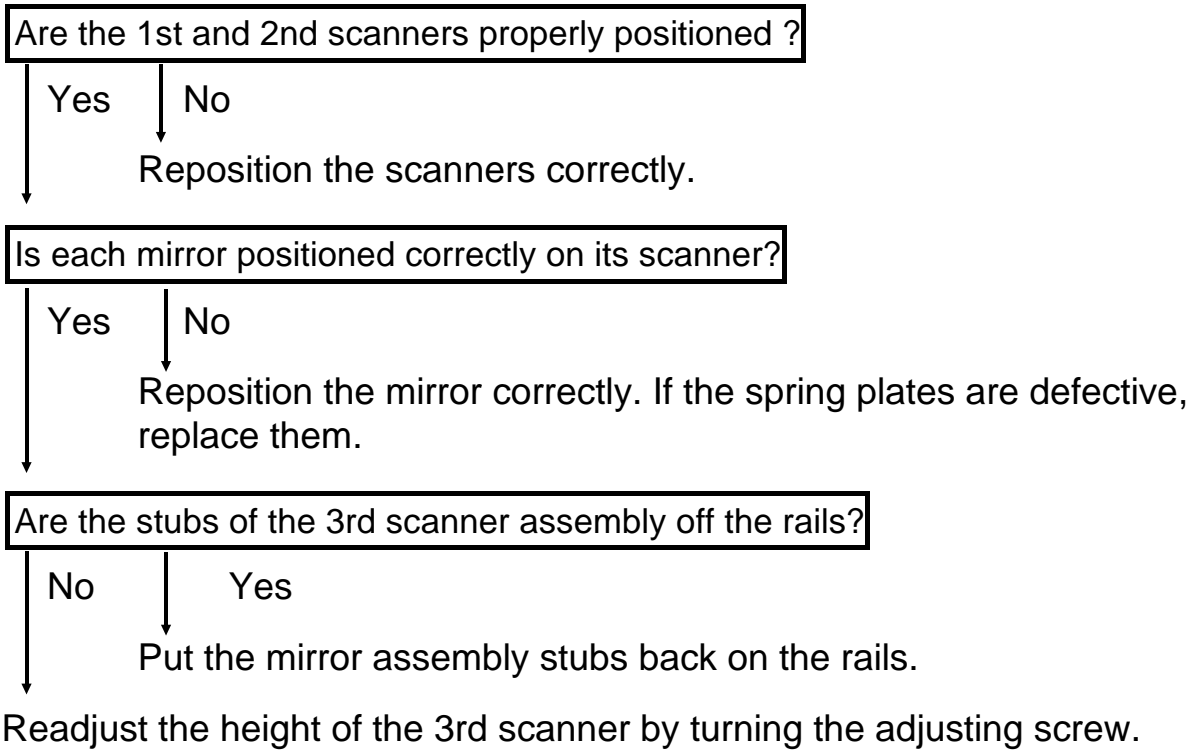
The sides of the copy image are straight, but the leading and trailing edges are skewed.
(This differs from skewing originating in the paper path type of skewing.)



- Possible Causes -

- 1. 1st and 2nd scanners are positioned improperly.
- 2. 3rd scanner is not parallel with the 1st and 2nd scanners.
- 3. Mirrors are in the wrong position.
- 4. The stubs of the 3rd scanner is off the rails.

- Action -



2.11 TONER DENSITY TOO HIGH

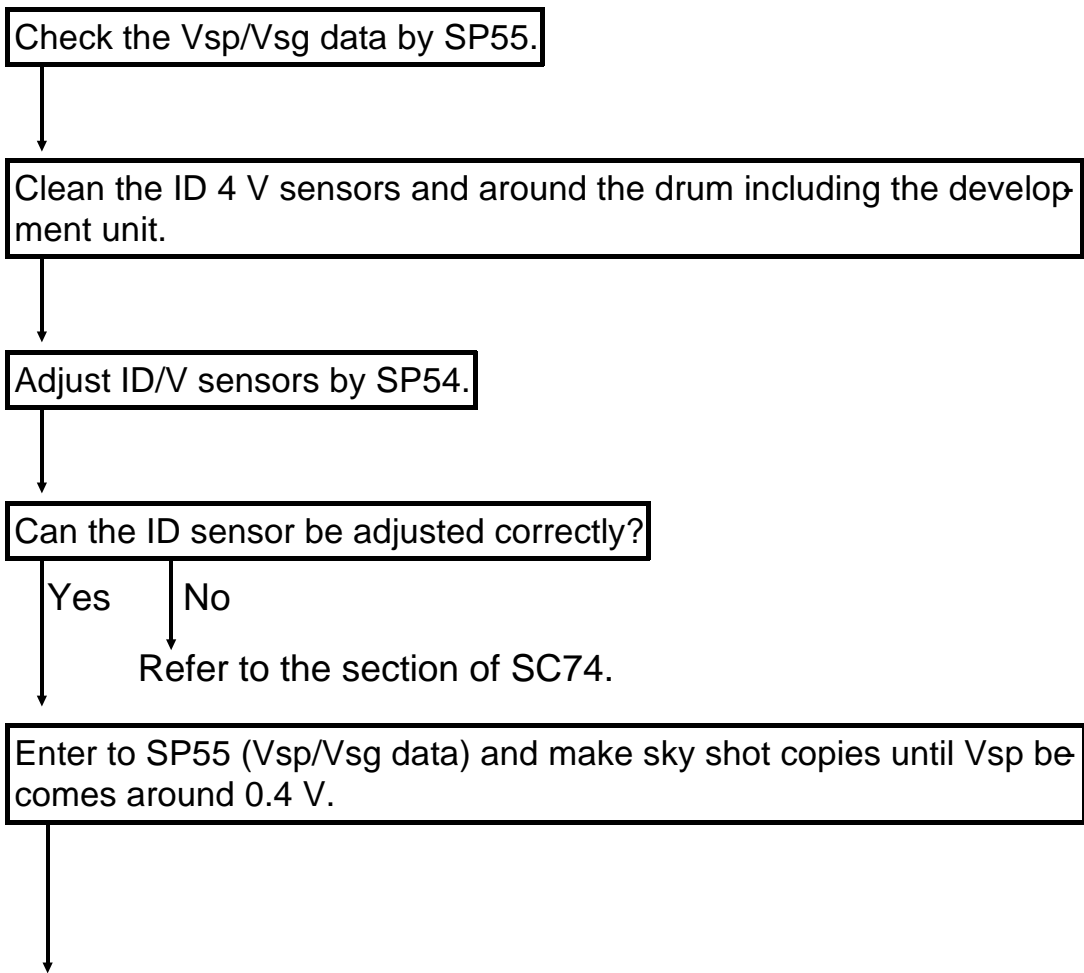
- Phenomenon -

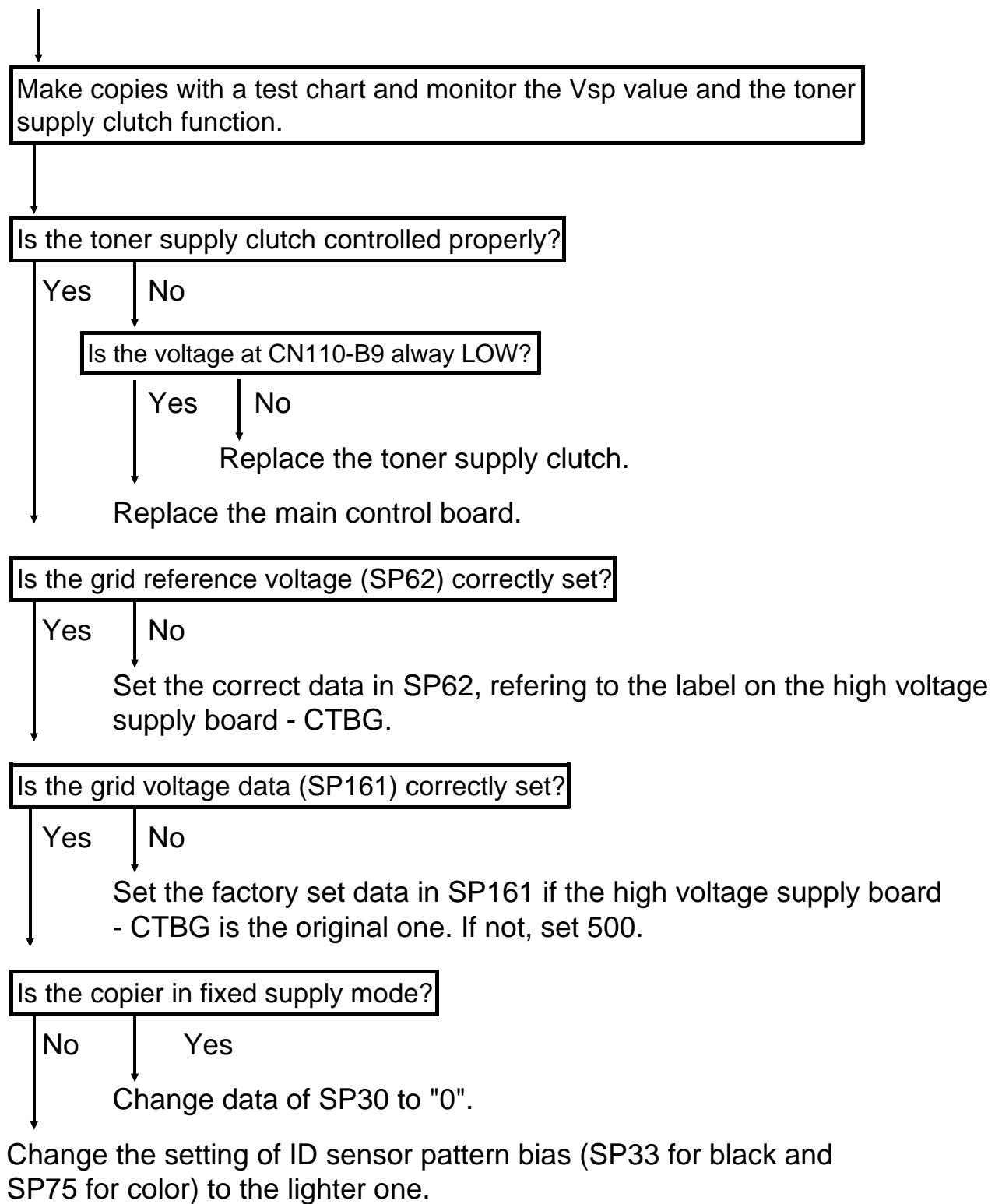
- 1. Dirty background appears on the copy.
- 2. The image density of black solid areas is too high.
- 3. Toner has built up on the endblock cover of the T/S corona unit and also on the PTL top mylar.

- Possible Causes -

- 1. Toner supply clutch keeps on turning continuously.
- 2. Copier is in abnormal fixed toner supply mode.
- 3. Main Control board is defective.
- 4. ID sensor pattern bias is too low.
- 5. ID sensor grid bias voltage is too low.

- Action -





2.12 TONER DENSITY TOO LOW

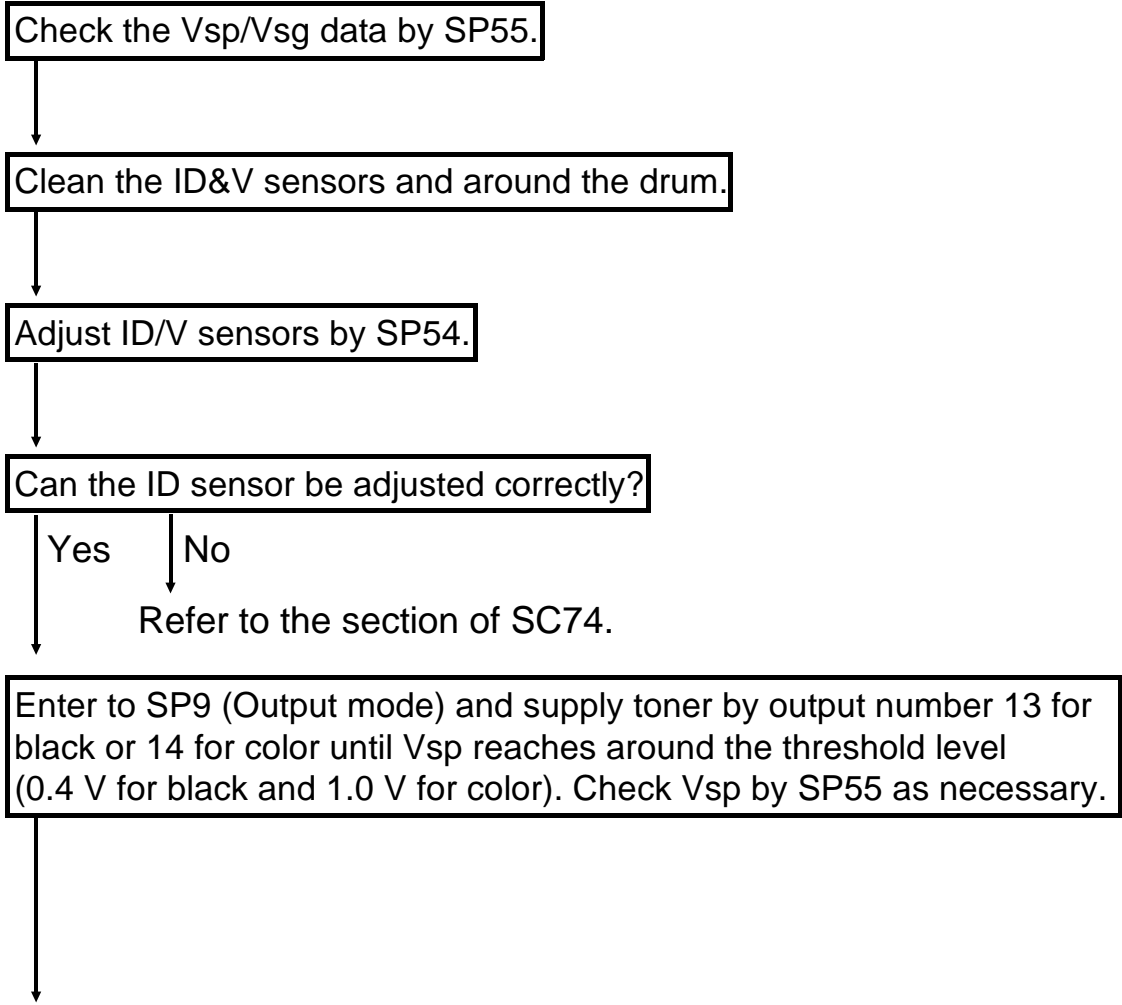
- Phenomenon -

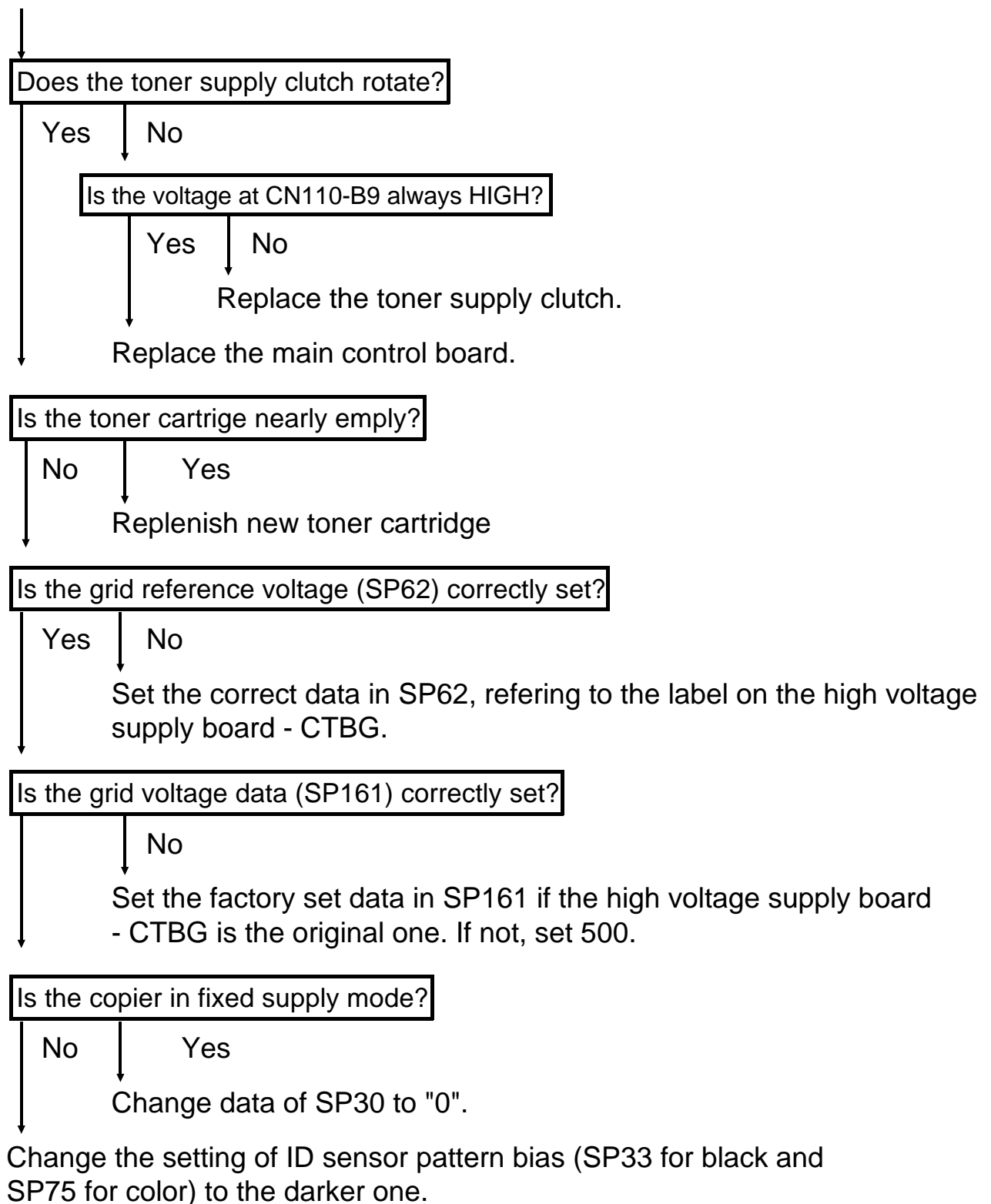
- 1. Light copy
- 2. Carrier is on the copy.
- 3. Light spots appear in black solid areas.

- Possible Causes -

- 1. Toner supply clutch does not rotate.
- 2. Copier is in the (abnormal) fixed toner supply mode.
- 3. Main control board is defective.
- 4. ID sensor pattern bias is too high.
- 5. ID sensor grid bias voltage is too high.

- Action -





2.13 TONER SCATTERING

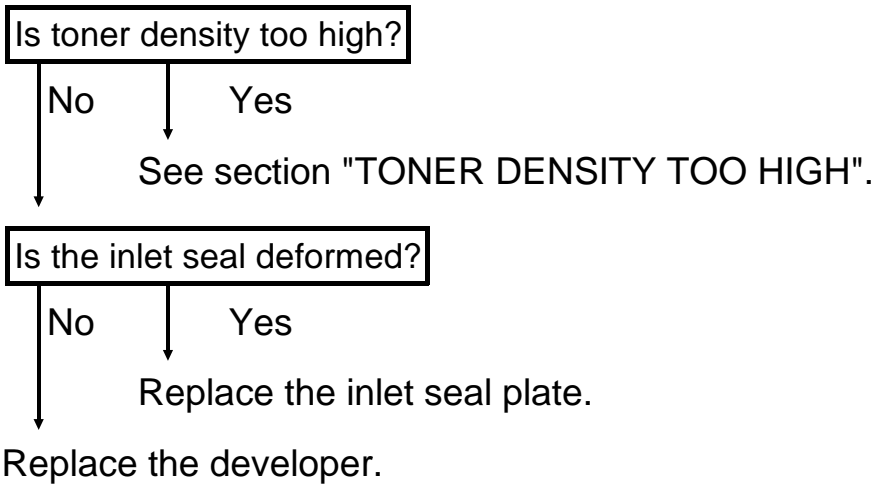
- Phenomenon -

Toner scatters from the development unit.

- Possible Causes -

- 1. Toner density is too high.
- 2. Inlet seal on the development unit is out of position.
- 3. Developer has deteriorated.

- Action -



2.14 UNFUSED COPY IMAGE

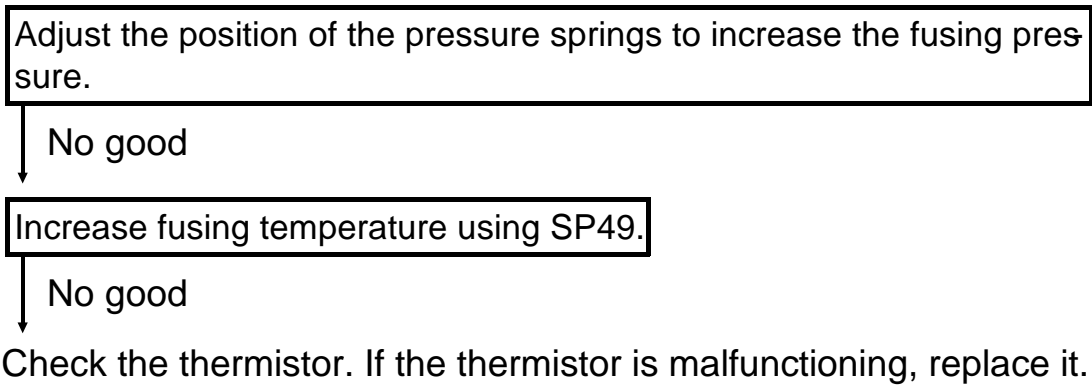
- Phenomenon -

Solid image rubs off easily.

- Possible Causes -

- 1. Fusing pressure is too weak.
- 2. Fusing temperature is too low.
- 3. Thermistor is malfunctioning.

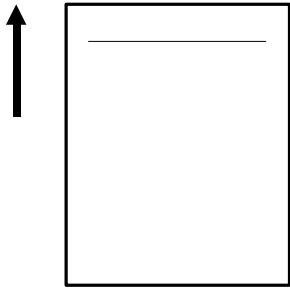
- Action -



2.15 A HORIZONTAL THIN LINE APPEARING CLOSE TO THE LEADING EDGE

- Phenomenon -

When an original has black solid areas at the trailing edge, toner transferred from the trailing edge onto the hot roller will appear on the next copy paper.



- Action -

Set SP157 (trail edge erase) to leave a blank margin on the trailing edge of copies.
(The blank margin can be adjusted from 0 to 4 mm in 0.5 mm steps when the lead edge registration is adjusted to 0 mm.)

2.16 CREASING AFTER FUSING

- Phenomenon -

Under high humidity conditions, humidified copy paper creases as it comes out of the fusing unit.

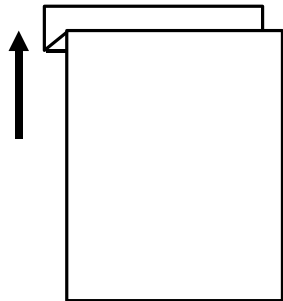
- Action -

Install an optional tray heater on each paper feeding station. Refer to "Tray heater installation" in section 3.
(The tray heater is available as a service part.)

2.17 Z-FOLDED COPY OR LEAD EDGE REGISTRATION VARIES

- Phenomenon -

Copies are folded like "Z" shape at the leading part. The variation of lead edge registration is too big.



- Action -

Adjust the paper buckle amount between the registration rollers and the upper relay rollers (or feed & separation rollers) by SP mode for each paper feeding station.
SP150:By-pass feed/LCT
SP151:Upper paper tray
SP152:Lower paper tray and paper tray unit

3. SERVICE CALL CONDITIONS

3.1 CODE #11 - EXPOSURE LAMP ERROR 1 (STAND-BY)

- Definition -

The exposure lamp turns on or opens during stand-by condition.

- Possible Cause -

- Exposure lamp open
- Optics thermoswitch open
- Main power relay defective
- Defective dc power supply board (triac or lamp voltage detection circuit)

NOTE: To reset this service call condition, enter to the SP mode, then turn the main switch off and on.

3.2 CODE #12 - EXPOSURE LAMP ERROR 2 (COPYING)

- Definition -

The exposure lamp circuit stays open longer than 20 seconds during a copy cycle.

The exposure lamp stays on longer than 20 seconds during a copy cycle.

- Possible Cause -

- Exposure lamp open
- Optics thermoswitch open
- Main power relay defective
- Defective dc power supply board (triac or lamp voltage detection circuit) defective

NOTE: To reset this service call condition, enter to the SP mode, then turn the main switch off and on.

3.3 CODE #20 - SCANNER MOTOR ERROR

- Definition -

The difference of pulse numbers for the scanner drive motor between the number of pulses in forward and reverse exceeds a certain number. (When initializing and copying.)

- Possible Cause -

- Scanner movement too heavy
- Scanner drive motor defective
- Scanner drive motor control board defective
- Main control board defective

3.4 CODE #21 - SCANNER HOME POSITION ERROR 1

- Definition -

The scanner home position sensor remains deactivated (photo-transistor. stays on) 4 seconds after the main switch is turned on.

- Possible Cause -

- Scanner H.P. sensor defective
- Scanner movement too heavy
- Scanner drive motor defective
- Scanner motor control board defective
- Scanner drive belt out of position

3.5 CODE #22 - SCANNER HOME POSITION ERROR 2

- Definition -

The scanner home position sensor remains activated (photo-transistor. stays off) 0.1 seconds after the main switch is turned on.

- Possible Cause -

- Scanner H.P. sensor defective
- Scanner movement too heavy
- Scanner drive motor defective
- Scanner motor control board defective
- Scanner drive belt out of position

3.6 CODE #23 - LEAD EDGE SIGNAL ERROR

- Definitions -

The main CPU does not receive a scan lead edge signal from the I/O CPU on the main control board from when the scanner starts going forward till it starts returning.

- Possible Cause -

- Main control board defective]
- Electrical noise resulting in a communication error between the CPU's on the main control board.

3.7 CODE #24 - SCANNER HOME POSITION SIGNAL ERROR

- Definition -

The main CPU does not receive a scanner H.P. signal from the I/O CPU on the main control board 20 seconds after the magnification ratio is changed or 20 seconds after the scanner starts from the H.P.

- Possible Cause -

- Main control board defective
- Electrical noise resulting in a communication error between the CPU's on the main control board.

3.8 CODE #28 - LENS HOME POSITION ERROR 1

-Definition -

The lens H.P. sensor remains activated (photo-transistor. stays off) 2.4 seconds after the reduction mode is selected or the main switch is turned on.

- Possible Cause -

- Lens H.P. sensor defective
- Lens drive motor defective
- Lens movement too heavy
- Main control board defective

3.9 CODE #29 - LENS HOME POSITION ERROR 2

-Definition -

The lens H.P. sensor remains deactivated (photo-transistor stays on) 2.4 seconds after the reduction mode is selected or the main switch is turned on.

- Possible Cause -

- Lens H.P. sensor defective
- Lens drive motor defective
- Lens movement too heavy
- Main control board defective

3.10 CODE #2A - 3RD SCANNER HOME POSITION ERROR 1

- Definition -

The 3rd scanner H.P. sensor remains deactivated (photo-transistor stays on) 2.4 seconds after the 3rd scanner moves to the left in enlargement/reduction mode, or the main switch is turned on.

- Possible Cause -

- 3rd scanner H.P. sensor defective
- 3rd scanner drive motor defective
- 3rd scanner movement too heavy
- Main control board defective

3.11 CODE #2B - 3RD SCANNER HOME POSITION ERROR 2

- Definition -

The 3rd scanner H.P. sensor remains activated (photo-transistor stays off) 2.4 seconds after the 3rd scanner moves to the right in enlargement/reduction mode or the main switch is turned on.

- Possible Cause -

- 3rd scanner H.P. sensor defective
- 3rd scanner drive motor defective
- 3rd scanner movement too heavy
- Main control board defective

3.12 CODE #41 TO #45 - PAPER TRAY LIFT MOTOR ERROR

- Definition -

The tray lift motor stays on over 15 seconds for lifting or lowering.

#41: Copier upper tray lift motor (non-duplex machine only)—

#42: Copier lower tray lift motor

#43: Tray lift motor 1 (paper tray unit)

#44: Tray lift motor 2 (paper tray unit)

#45: Tray lift motor 3 (paper tray unit)

- Possible Cause -

- Tray lift motor defective
- Tray upper limit sensor defective
- Paper end sensor defective
- Tray bottom plate movement too heavy

3.13 CODE #46 - LCT LIFT MOTOR ERROR

- Definition -

The LCT lift motor stays on over 30 seconds for lifting or lowering.

- Possible Cause -

- LCT cover-2 switch (SW15) is not activated or the switch it self is defective.
- LCT lift motor defective
- LCT upper limit sensor defective
- LCT lower limit sensor defective
- LCT bottom plate movement too heavy
- LCT drive belt out of position

3.14 CODE #53 - FUSING THERMISTOR OPEN

- Definition -

The CPU detects the fusing thermistor open condition for over 10 seconds.

- Possible Cause -

- Fusing thermistor open
- Fusing unit not in position
- Main control board defective

NOTE: To reset this SC condition, enter to the SP mode then turn the main switch off and on.

3.15 CODE #54 - FUSING WARM-UP ERROR

- Definition -

The fusing temperature does not reach 175°C 4 minutes after the main switch is turned on.

- Possible Cause -

- Fusing lamp open
- Fusing thermofuse open
- Fusing thermistor not in position
- Main power relay (RA1) defective
- Defective dc power supply board (triac or fusing lamp drive circuit)
- Main control board defective

NOTE: To reset this SC condition, enter to the SP mode then turn the main switch off and on.

3.16 CODE #55 - FUSING OVERHEAT

- Definition -

The fusing temperature reaches over 220°C.

- Possible Cause -

- Fusing thermistor short
- Defective dc power supply board (triac of fusing lamp drive circuit)
- Main control board defective

NOTE: To reset this SC condition, enter to the SP mode then turn the main switch off and on.

3.17 CODE #61 - MAIN DRIVE MOTOR ERROR

- Definition -

The main motor does not start rotating within 2 seconds after the CPU sends the main motor on signal.

The CPU detects this condition by the lock signal "L" from the main motor control board. During a copy cycle, the paper jam signal is detected prior to this lock signal.

- Possible Cause -

- Main motor defective
- Main motor control board defective
- Mechanical components driven by main motor too heavy

3.18 CODE #62 - TRANSPORT FAN MOTOR ERROR

- Definition -

The transport fan motor does not start rotating within 2 seconds after the CPU sends the transport fan motor on signal.

The CPU detects this condition through the lock signal "L" of the fan motor.

- Possible Cause -

- Transport fan motor poorly connected
- Transport fan motor defective
- Main control board defective

3.19 CODE #63 - EXHAUST BLOWER MOTOR ERROR

- Definition -

The exhaust blower motor does not start rotating within 2 seconds after the CPU sends the exhaust blower motor on signal.

The CPU detects this condition through the lock signal "L" of the fan motor.

- Possible Cause -

- Exhaust blower motor poorly connected
- Exhaust blower motor defective
- Main control board defective

3.20 CODE #64 - FUSING EXHAUST FAN MOTOR ERROR

- Definition -

The fusing exhaust fan motor does not start rotating within 2 seconds after the CPU sends the fusing exhaust fan motor on signal.

The CPU detects this condition through the lock signal "L" of the fan motor.

- Possible Cause -

- Fusing exhaust fan motor poorly connected
- Fusing exhaust fan motor defective
- Main control board defective

3.21 CODE #72 - TRANSFER CORONA CURRENT ADJUSTMENT ERROR

- Definition -

When performing SP57 (auto drum current adjustment):

1. Transfer drum current is lower than the adjustment standard at the maximum output from the high voltage power supply board -T.
2. Transfer drum current is higher than the adjustment standard at the minimum output from the high voltage power supply board -T.

- Possible Cause -

- Transfer corona wire broken
- T/S corona unit not in position
- Drum unit poorly connected
- High voltage power supply board - CTBG defective
- Main control board defective

3.22 CODE #73 - SEPARATION CORONA CURRENT ADJUSTMENT ERROR

- Definition -

When performing SP57 (auto drum current adjustment):

1. Separation drum current is lower than the adjustment standard at the maximum output from the high voltage power supply board - D.
2. Separation drum current is higher than the adjustment standard at the minimum output from the high voltage power supply board - D.

- Possible Cause -

- Separation corona wire broken
- T/S corona unit not in position
- Drum unit poorly connected
- High voltage power supply board - D defective
- Main control board defective

3.23 CODE #74 - ID SENSOR ADJUSTMENT ERROR

- Definition -

When performing SP54 (auto Vsg/Vlg adjustment):

1. ID sensor output (Vsg) is lower than the adjustment target (4.0 V) at the maximum output of the ID sensor's LED.
2. ID sensor output (Vsg) is higher than the adjustment target (4.0 V) at the minimum output of the ID sensor's LED.

- Possible Cause -

- ID sensor board defective
- ID sensor board poorly connected
- Main control board defective

3.24 CODE #75 - V SENSOR ADJUSTMENT ERROR

- Definition -

When performing SP54 (auto Vsg/Vlg adjustment):

1. V sensor output (Vlg) is lower than the adjustment target (4.0 V) at the maximum output of the V sensor's LED.
2. V sensor output (Vlg) is higher than the adjustment target (4.0 V) at the minimum output of the V sensor's LED.

- Possible Cause -

- V sensor board defective
- V sensor board poorly connected
- Main control board defective

3.25 CODE #76 - ADS SENSOR ADJUSTMENT ERROR

- Definition -

When performing SP56 (auto ADS gain adjustment):

1. ADS sensor output is lower than the adjustment target (1.5 V) at the maximum gain data of the ADS sensor.
2. ADS sensor output is higher than the adjustment target (1.5 V) at the minimum gain data of the ADS sensor.

- Possible Cause -

- ADS sensor board defective
- ADS sensor board poorly connected
- Main control board defective
- Lens housing cover improperly installed

3.26 CODE #81 - JOGGER HOME POSITION ERROR 1

- Definition -

The jogger H.P. sensor remains deactivated (photo-transistor stays on) 0.8 seconds after the jogger fence started the returning.

- Possible Cause -

- Jogger motor defective
- Jogger H.P. sensor defective
- Jogger fence movement too heavy
- Main control board defective

3.27 CODE #82 - JOGGER HOME POSITION ERROR 2

- Definition -

The jogger H.P. sensor remains activated (photo-transistor stays off) 0.16 seconds after the jogger fence started going forward.

- Possible Cause -

- Jogger motor defective
- Jogger H.P. sensor defective
- Jogger fence movement too heavy
- Main control board defective

3.28 CODE #91 - TOTAL COUNTER ERROR

- Definition -

During a copy cycle the CPU does not receive a total counter reed switch on signal.

- Possible Cause -

- Total counter poorly connected
- Total counter defective

3.29 CODE #92 - TOTAL COUNTER SHORT

- Definition -

The CPU always receives a total counter reed switch on signal.

- Possible Cause -

- Total counter defective

3.30 CODE #93 - INTERFACE SIGNAL ERROR

- Definition -

Main CPU does not receive a response signal from the I/O CPU.

- Possible Cause -

- Main control board defective
- Electrical noise resulting in a communication error between the CPU's on the main control board

3.31 CODE #94 - EDITOR SIGNAL ERROR

- Definition -

An interface communication error occurs between the main CPU and the editor board.

- Possible Cause -

- Editor board defective
- Main control board defective

3.32 CODE #95 - AREA CODE DETECTION ERROR

- Definition -

The CPU cannot recognize the area code from the diode matrix signal from the operation panel.

- Possible Cause -

- Operation panel board defective
- Main control board defective

3.33 CODE #dE - VL INITIAL DETECTION ERROR

- Definition -

The CPU cannot detect the proper Vref setting at the initial VL pattern detection after performing SP66 (drum initialization).

- Possible Cause -

- SP54 (auto Vsg/Vlg adjustment) not performed
- Toner density too high
- Toner density too low
- Development unit not set
- OPC drum not set
- OPC drum with a large heavy scratch at V sensor detection area
- Cleaning unit not set
- Exposure Lamp voltage (SP48) is not adjusted properly (too high or too low).

3.34 BLINKING "CALL SERVICE" INDICATOR (WITHOUT ANY SC CODE #)

- Definition -

The possible problems are listed below. Check the actual causes through the data of SP7.

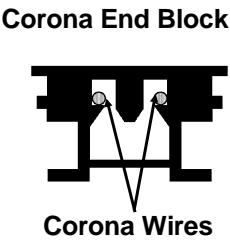
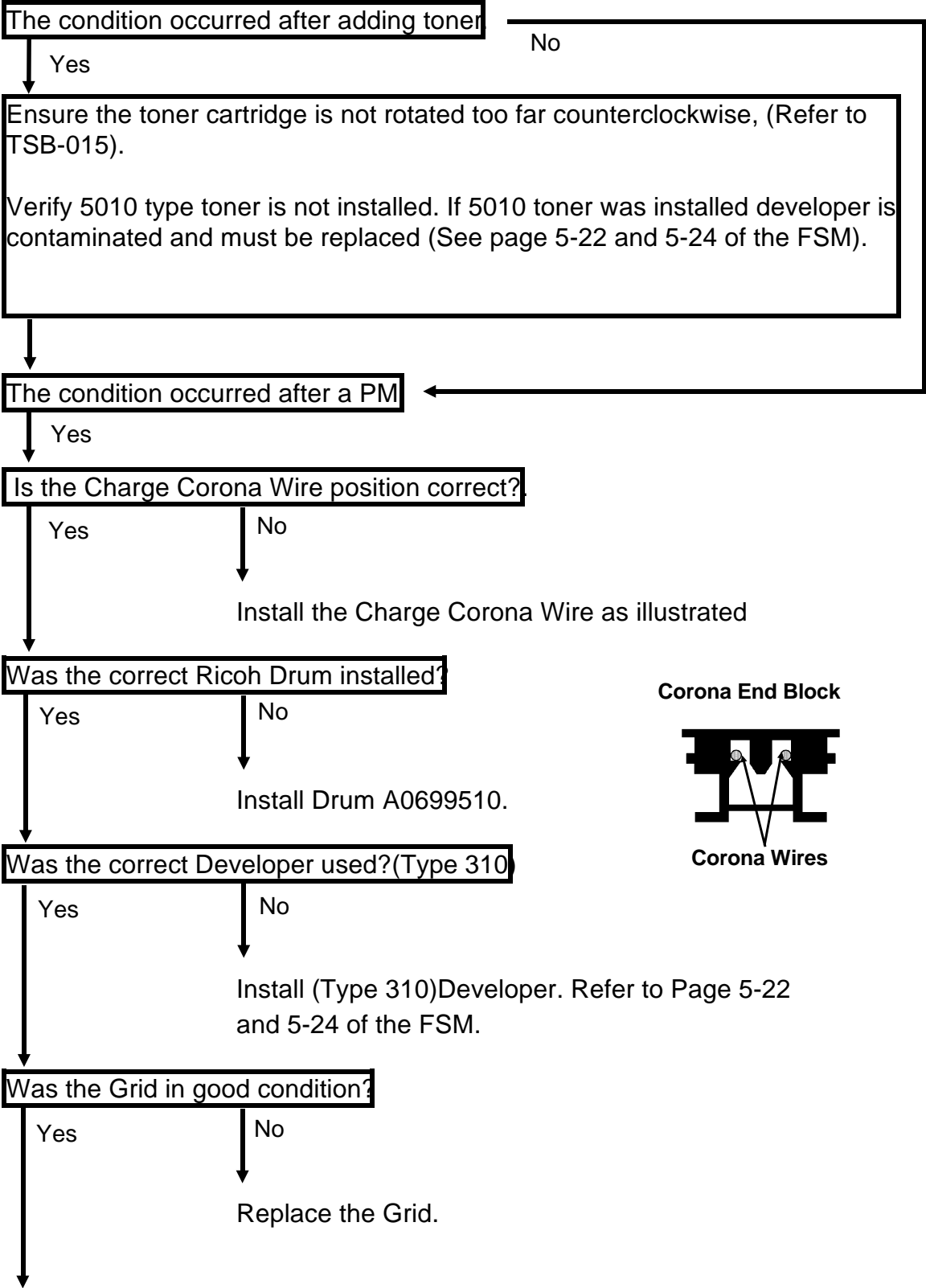
- 1: The PM counter (SP88) has reached the set PM interval (SP87).
- 2: The copier is operating under ID sensor abnormal condition.
Vsg abnormal: Vsg=0.00
Vsp abnormal: Vsp=5.00
- 3: The used toner tank is nearly full. (The copier will stop within 250 copies.)

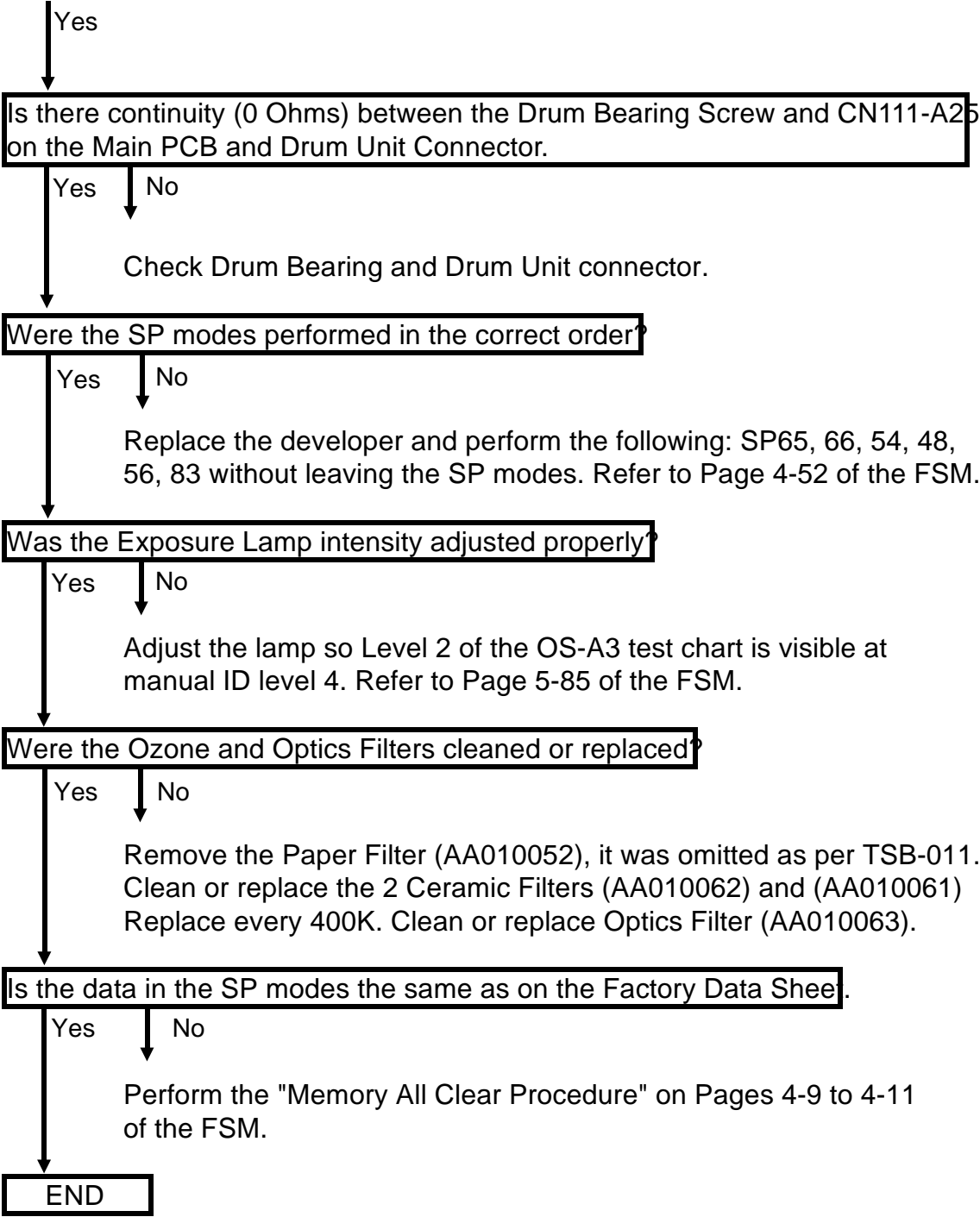
NOTE: A combination of causes is possible. The three digit indicator will show 1, 2, 3, 12, 13, 23, or 123.

- Possible Cause -

- The PM counter (SP88) has reached the set PM interval (SP87).
- Main control board defective.
- Incorrect Vsg voltage.
- Dirty ID sensor.
- Low toner density.
- Incorrect setting for SP84 (Editing eraser).
- ID sensor defective.
- Main control board defective.
- Toner supply clutch defective.
- The used toner tank is nearly full.
- Toner end counter (SP58) was not reset by SP83 the last time the used toner tank was emptied.
- The main control board is defective.















- Action -















































4. ELECTRICAL COMPONENT DEFECTS

4.1 SENSORS

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
By-pass feed table (S1)	 ≥0.9 Vcc	104-B9	Open	"By-pass feed" indicator lights even if the by-pass feed table is closed.	By-pass feed mode is selected and "paper end" indicator lights.
	 ≤0.5 V		Shorted	By-pass feed mode cannot be selected even if the by-pass feed table is opened.	
Upper tray set (non- duplex machine only) (S2)	 ≥0.9 Vcc	104-B18	Open	After loading paper, "Paper end" indicator lights when the upper tray is selected.	
	 ≤0.5 V		Shorted	"Paper size" indicator does not light and upper tray cannot be selected, even if the paper tray is set.	
Lower tray set (S3)	 ≥0.9 Vcc	104-B20	Open	After loading paper, "Paper end" indicator lights when the lower tray is selected.	
	 ≤0.5 V		Shorted	"Paper size" indicator does not light and lower tray cannot be selected, even if the paper tray is set.	
By-pass feed paper end (S4)	 ≥0.9 Vcc	105-B11	Open	"Paper end" indicator does not light even if there is no paper on the by-pass feed table.	
	 ≤0.5 V		Shorted	"Paper end" indicator still lights even if paper is set on the by-pass feed table.	
Upper tray paper end (non-duplex machine only) (S5)	 ≥0.9 Vcc	104-B5	Open	When upper tray is selected "Paper end" indicator still lights, even if paper is added.	
	 ≤0.5 V		Shorted	when upper tray is selected "Paper end" indicator does not light, even though paper there is no in the upper tray.	
Lower tray paper end (S6)	 ≥0.9 Vcc	104-B14	Open	when lower tray is selected, "Paper end" indicator still lights even if paper is added.	
	 ≤0.5 V		Shorted	When lower tray is selected, "Paper end" indicator does not light, even though there is no paper in the lower tray.	
Upper tray upper limit (non-duplex machine only) (S7)	 ≥0.9 Vcc	104-B8	Open	When the last paper has fed out from the upper tray, "Paper end" indicator lights for an instant. The upper tray lift motor does not rotate.	
	 ≤0.5 V		Shorted	After blinking the paper size indicator, "SC#41" is displayed.	

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Lower tray upper limit (S8)	 ≥0.9 Vcc	104-B17	Open	When the last paper was fed out from the lower tray, "Paper end" indicator lights for an instant. The lower tray lift motor does not rotate.	
	 ≤0.5 V		Shorted	After blinking, the paper size indicator "SC#42" is displayed.	
Lower relay (S9)	 ≥0.9 Vcc	104-B15	Open	—	"Paper jam A " indicator starts blinking when copies are made from the lower tray.
	 ≤0.4 V		Shorted	"Paper jam A " indicator starts blinking even if there is no paper.	
Upper relay (S10)	 ≥0.9 Vcc	104-B7	Open	—	"Paper jam A " indicator starts blinking when copies are made from the trays or in duplex mode.
	 ≤0.4 V		Shorted	"Paper jam A " indicator starts blinking even if there is no paper.	
Registration (S11)	 ≥0.9 Vcc	105-A6	Open	—	"Paper jam A " indicator starts blinking when copies are made.
	 ≤0.4 V		Shorted	"Paper jam A " indicator starts blinking even if there is no paper.	
Image density (ID) (S12)		110-B27	Open	"SC#74" is displayed when SP#54 is performed.	
			Shorted		
V Sensor (S13)		111-A27	Open	"SC#75" is displayed when SP#54 is performed.	
			Shorted		
Fusing exit (S14)	 ≥2.4 Vcc	111-B8	Open	—	"Paper jam B " indicator starts blinking when copies are made.
	 ≤0.5 V		Shorted	"Paper jam B " indicator starts blinking even if there is no paper.	
Junction gate (duplex machine only) (S15)	 ≥2.5 Vcc	111-B9	Open	—	"Paper jam C " indicator starts blinking when copies are made in duplex mode.
	 ≤0.5 V		Shorted	"Paper jam C " indicator starts blinking even if there is no paper.	

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Scanner H.P. (S16)	 ≥0.9 Vcc	109-A11	Open	"SC#22" is displayed	"SC#22" is displayed when copies are made.
	 ≤0.5 V		Shorted	"SC#21" is displayed	"SC#21" is displayed when copies are made.
Lens H.P. (S17)	 ≥0.9 Vcc	109-B10	Open	"SC#29" is displayed	"SC#29" is displayed when the magnification ratio is changed.
	 ≤0.5 V		Shorted	"SC#28" is displayed	"SC#28" is displayed when the magnification ratio is changed.
Platen position (S18)	 ≥0.9 Vcc	111-B11	Open	Original size "*" is indicated.	Original size indicator does not change even if a different size original placed on the exposure glass.
	 ≤0.5 V		Shorted	When the platen cover is closed, the original size is indicated "*" or A3/11" x 17".	
3rd scanner H.P. (S19)	 ≥0.9 Vcc	109-A10	Open	"SC2b" is displayed.	"SC#2b" is displayed when the magnification ratio is changed.
	 ≤0.5 V		Shorted	"SC2a" is displayed.	"SC#2A" is displayed when the magnification ratio is changed.
Original length (S20)	 	111-B21	Open	The CPU cannot properly detect original size. APS and AMS do not function correctly.	
		111-B22			
		111-B23	Shorted		
		111-B24			
		111-B25			
Original width (S21)	 	111-B19	Open	The CPU cannot properly detect original size. APS and AMS do not function correctly.	
		111-B20	Shorted		
Duplex entrance (duplex machine only) (S22)	 ≥2.4 V	111-A5	Open	— —	"Paper jam E" indicator starts blinking when copies are made in duplex mode.
	 ≤0.8 V		Shorted	—	

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Duplex turn gate (duplex machine only) (S23)	 ≥2.4 V	111-B5	Open	"Paper jam E" indicator starts blinking.	—
	 ≤0.8 V		Shorted	"Paper jam E" indicator starts blinking.	
Duplex paper end (duplex machine only) (S24)	 ≥2.4 V	111-B4	Open	—	When multi duplex copies are made, paper jam should be accessed in duplex tray.
	 ≤0.8 V		Shorted	—	
Jogger H.P. (duplex machine only) (S25)	 ≥2.4 V	111-B6	Open	—	"SC#82" is displayed when copies are made in duplex mode.
	 ≤0.8 V		Shorted	—	
LCT paper end (LCT machine only) (S26)	 ≥0.9 Vcc	105-B12	Open	When LCT is selected "Paper end" indicator does not light even though paper is empty	
	 ≤0.5 V		Shorted	Tray goes down even if paper is not empty.	
LCT lower limit (LCT machine only) (S27)	 ≥0.9 Vcc	105-B17	Open	Tray does not go down even if tray down switch is pressed.	Tray does not go down even though paper is empty in the LCT.
	 ≤0.5 V		Shorted	"SC#46" is displayed after tray goes down.	
LCT upper limit (LCT machine only) (S28)	 ≥0.9 Vcc	105-B18	Open	After tray goes down, tray does not lift up.	
	 ≤0.5 V		Shorted	"SC#46" is displayed after tray lifts up.	

≥2.4 V

4.2 SWITCHES

Component	CN No.	Condition	Symptom
Upper paper size (SW1) (SW2) (SW3) (SW4)	104-B1 104-B2 104-B3 104-B4	Open	The CPU cannot detect proper paper size, and misfeeds may occur when copies are made.
		Shorted	
Lower paper size (SW5) (SW6) (SW7) (SW8)	104-B 9 104-B10 104-B11 104-B12	Open	The CPU cannot detect proper paper size, and misfeeds may occur when copies are made.
		Shorted	
Color detection (SW9)	111-A6 111-B7	Open	The CPU cannot detect proper color development unit, and cannot properly control the copy process system for the development unit. This may cause an abnormal image.
		Shorted	
Exit cover (SW10)	111-B10	Open	"C-2" is displayed even if the exit cover is closed.
		Shorted	"C-2" is not displayed even if exit cover is opened.
Platen cover (SW11)	111-B12	Open	The CPU cannot detect proper original size correctly.
		Shorted	
Front door safety (SW12)	—	Open	"C-1" is displayed even if the front door is closed.
	—	Shorted	"C-1" is not displayed even if the front door is opened.
Main SW (SW13)	—	Open	The copier does not turn on.
	—	Shorted	The copier does not turn off.
LCT cover -1 (SW14)	105-B14	Open	When LCT is selected, "C-4" is displayed even if LCT cover is closed.
		Shorted	When LCT is selected, "C-4" is not displayed even if LCT cover is opened.

Component	CN No.	Condition	Symptom
LCT cover -2 (SW15)	105-A5	Open	The tray does not go down even if the tray down switch is pressed. After 30 seconds, "SC#46" is displayed.
		Shorted	The tray goes down continuously.
	105-B6	Open	<ul style="list-style-type: none">During the copier runs, the "Paper end" indicator lights and the tray goes down even if paper there is still.After loading paper, the tray does not go up and "SC#46" is displayed.
		Shorted	The tray goes up continuously.
Tray down (SW16)	105-A8	Open	The tray does not go down and LED does not light even if the tray down switch is pressed.
		Shorted	

4.3 FUSES

Component	Condition	Symptom
F1 (125V/10A) (DC Power Supply Board)	Open	The copier does not turn on when the main switch is turned on.
F2 (125V/6.3A) (DC Power Supply Board)	Open	"C-5" is displayed first then "SC#2A" or "SC#23" is displayed depending on the 3rd scanner position when the main switch is turned on.
F3 (125V/6.3A) (DC Power Supply Board)	Open	"Paper jam A" indicator starts blinking when copies are made. "SC#61" is displayed when copier starts idling or during the copy cycle.
F4 (125V/6.3A) (DC Power Supply Board)	Open	"SC#21" or "SC#22" is displayed depending on the 1st scanner position.
F1 (125V/10A) (Main Motor Control Board)	Open	"SC#61" is displayed when copier starts idling or during the copy cycle. "Paper jam A" indicator starts blinking when copies are made.
F1 (125V/15A) (Power Code Terminal)	Open	The copier does not turn on when the main switch is turned on.

SECTION 7

PAPER TRAY

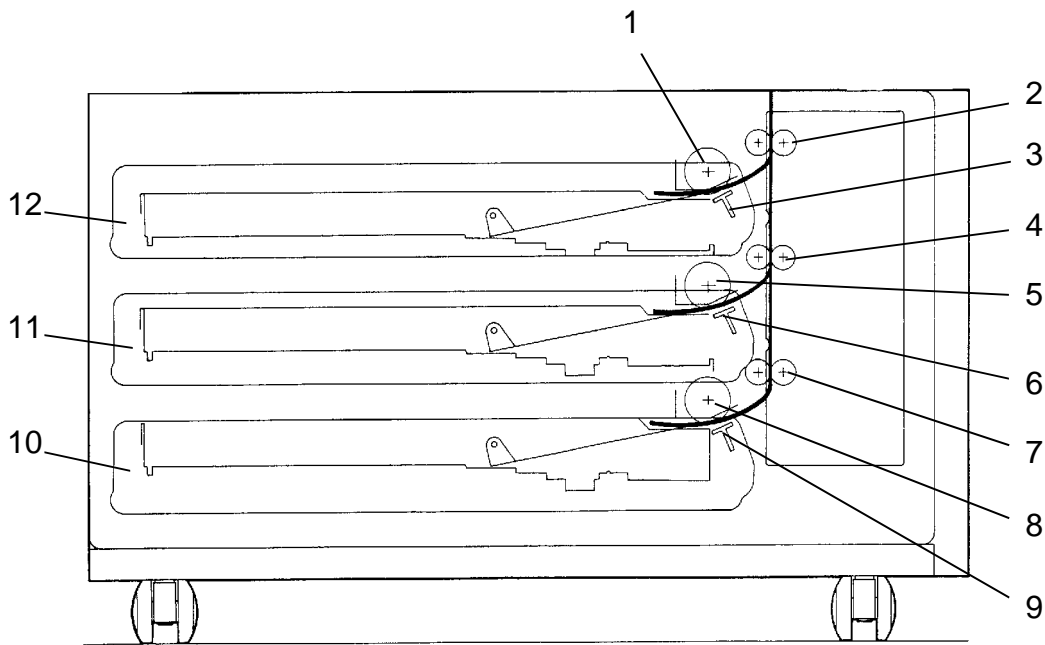
(PS250)

1. SPECIFICATION

Configuration:	1 tray type table or 3 tray type table
Copy Paper Size:	Maximum 11"X17" Minimum 8 1/2"X11"
Copy Paper Weight:	14 - 34lb.
Copy Paper Capacity:	Approximately 250 sheets
Paper Feeding Speed:	[Main frame: FT5733/5433 copier] 33 copies/minute (8 1/2"X11" sideways) 18 copies/minute (11"X17")
Power source:	Dc 24V, 5V from the main frame
Drive Source:	Driven by the main frame through gear engagements
Power Consumption:	Maximum 20W Average 15W
Dimensions:	26.8"(width) X 16.9"(depth) X 23.6"(height)
Weight:	Less than 99.2lb. (3 tray type)

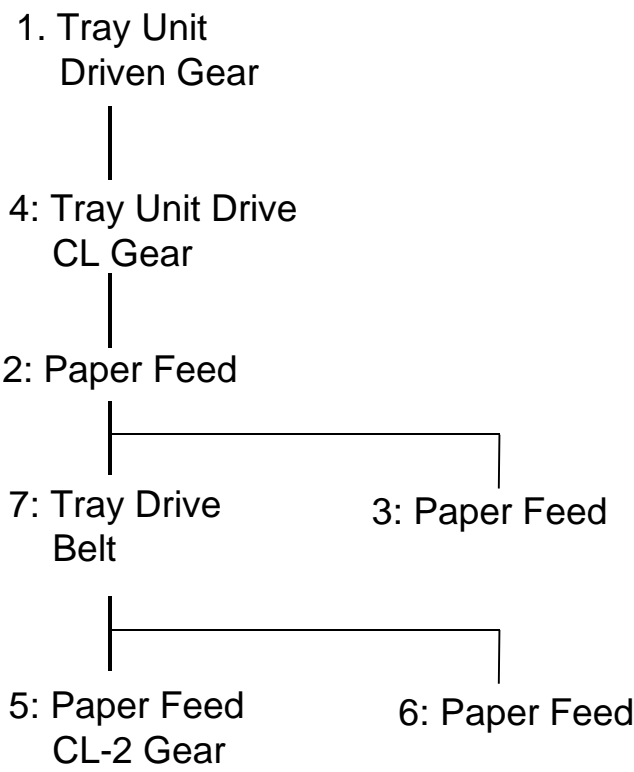
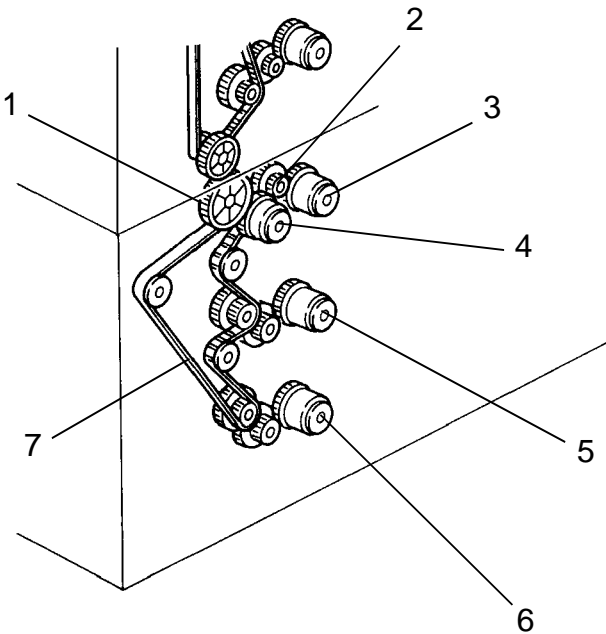
2. COMPONENT LAYOUT

2.1 MECHANICAL COMPONENT LAYOUT



- | | |
|-------------------------------------|-------------------------------------|
| 1. Paper Feed Roller (Paper Tray 1) | 7. Tray Relay Rollers -3 |
| 2. Tray Relay Rollers -1 | 8. Paper Feed Roller (Paper Tray 3) |
| 3. Friction Pad (Paper Tray 1) | 9. Friction Pad (Paper Tray 3) |
| 4. Tray Relay Rollers -2 | 10. Paper Tray -3 |
| 5. Paper Feed Roller (Paper Tray 2) | 11. Paper Tray -2 |
| 6. Friction Pad (Paper Tray 2) | 12. Paper Tray -1 |

2.2 DRIVE LAYOUT



2.3 ELECTRICAL COMPONENT DESCRIPTION

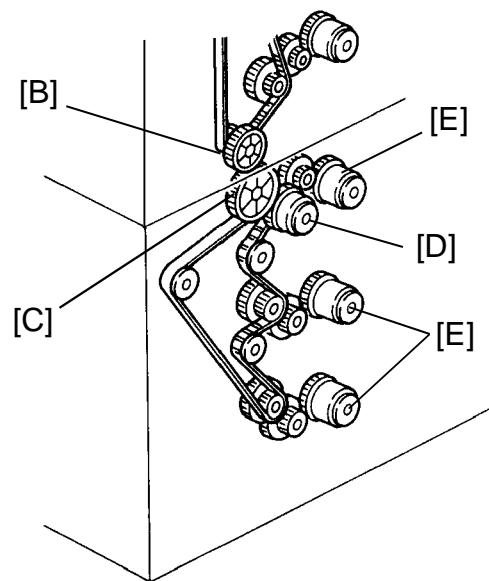
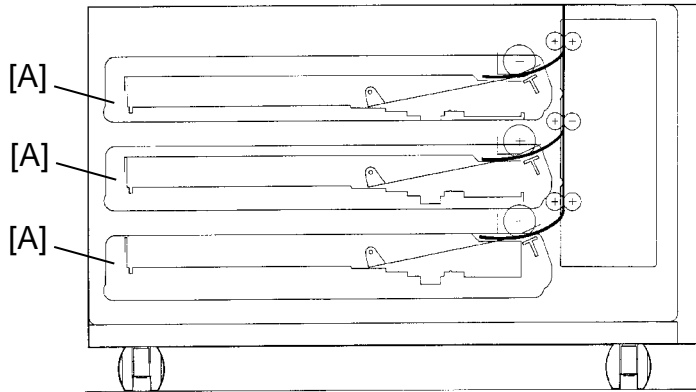
Refer to the electrical component layout on the reverse side of the Point to Point (water proof paper) for symbols and index numbers.

Symbol	Name	Function	Index No.
Motors			
M1	Tray lift - 1	Raises the bottom plate in paper tray - 1.	8
M2	Tray lift - 2	Raises the bottom plate in paper tray - 2.	30
M3	Tray lift - 3	Raises the bottom plate in paper tray - 3.	28
Circuit board			
PCB1	Tray control	Controls the paper tray functions according to the signal from the copier main board.	17
Switches			
SW1	Tray 1 : Paper size - 1	Determines what size paper is in the paper tray - 1.	1
SW2	Tray 1 : Paper size - 2	Determines what size paper is in the paper tray - 1.	3
SW3	Tray 1 : Paper size - 3	Determines what size paper is in the paper tray - 1.	6
SW4	Tray 1 : Paper size - 4	Determines what size paper is in the paper tray - 1.	9
SW5	Tray 2 : Paper size - 1	Determines what size paper is in the paper tray - 2.	38
SW6	Tray 2 : Paper size - 2	Determines what size paper is in the paper tray - 2.	4
SW7	Tray 2 : Paper size - 3	Determines what size paper is in the paper tray - 2.	7
SW8	Tray 2 : Paper size - 4	Determines what size paper is in the paper tray - 2.	11
SW9	Tray 3 : Paper size - 1	Determines what size paper is in the paper tray - 3.	2

Symbol	Name	Function	Index No.
SW10	Tray 3 : Paper size - 2	Determines what size paper is in paper tray - 3.	5
SW11	Tray 3 : Paper size - 3	Determines what size paper is in paper tray - 3.	31
SW12	Tray 3 : Paper size - 4	Determines what size paper is in paper tray - 3.	27
SW13	Tray unit door -- 1	Detects if the tray unit door is open or not.	32
SW14	Tray unit door -- 2	Cuts the dc 24 V line for the tray unit drive clutch when the tray unit door is open.	34
Magnetic clutches			
MC1	Paper feed - 1	Starts paper feed from paper tray 1.	14
MC2	Paper feed - 2	Starts paper feed from paper tray 2.	16
MC3	Paper feed - 3	Starts paper feed from paper tray 3.	18
MC4	Tray unit drive	Drives the rollers in the paper tray.	13
Solenoids			
SOL1	Tray lock - 1	Locks paper tray 1 in the paper tray unit.	40
SOL2	Tray lock - 2	Locks paper tray 2 in the paper tray unit.	39
SOL3	Tray lock - 3	Locks paper tray 3 in the paper tray unit.	37
Sensors			
S1	Tray set - 1	Detects if paper tray 1 is set or not.	15
S2	Tray set - 2	Detects if paper tray 2 is set or not.	21
S3	Tray set - 3	Detects if paper tray 3 is set or not.	22
S4	Tray upper limit - 1	Detects the upper position of the paper stack in paper tray 1 to stop tray lift motor 1.	10
S5	Tray upper limit - 2	Detects the upper position of paper stack in the paper tray 2 to stop tray lift motor 2.	29

Symbol	Name	Function	Index No.
S6	Tray upper limit - 3	Detects the upper position of the paper stack in paper tray 3 to stop tray lift motor 3.	26
S7	Paper end - 1	Informs the copier CPU when paper tray 1 runs out of paper.	12
S8	Paper end - 2	Informs the copier CPU when paper tray 2 runs out of paper.	19
S9	Paper end - 3	Informs the copier CPU when paper tray 3 runs out of paper.	20
S10	Tray relay - 1	Detects the lead edge of paper from paper tray 1 to determine the stop timing of paper feed clutch 1 and detects misfeeds.	25
S11	Tray relay - 2	Detects the lead edge of paper from paper tray 2 to determine the stop timing of paper feed clutch 2 and detects misfeeds.	24
S12	Tray relay - 3	Detects the lead edge of paper from the paper tray 3 to determine the stop timing of paper feed clutch 1 and detects misfeeds.	23
Heaters			
H1	Tray - 1 (option)	Turns on when the main switch is off to keep paper dry in paper tray 1.	36
H2	Tray - 2 (option)	Turns on when the main switch is off to keep paper dry in paper tray 2.	35
H3	Tray - 3 (option)	Turns on when the main switch is off to keep paper dry in paper tray 3.	33

3. OVERVIEW



There are two types of paper tray unit: one tray and three tray types. Each paper tray [A] is a drawer type and their function and mechanism are exactly the same as those of the main frame.

All the electrical components of the paper tray are controlled by the copier main control board through the tray control board.

All the tray rollers are driven by the main frame via the tray unit drive and driven gears [B,C]. When the tray unit drive clutch [D] is energized, the drive is transmitted to the paper tray unit and the relay rollers start rotating. When the paper feed clutch [E] for the selected paper tray is energized, paper is fed from the paper tray to the main frame through the relay rollers.

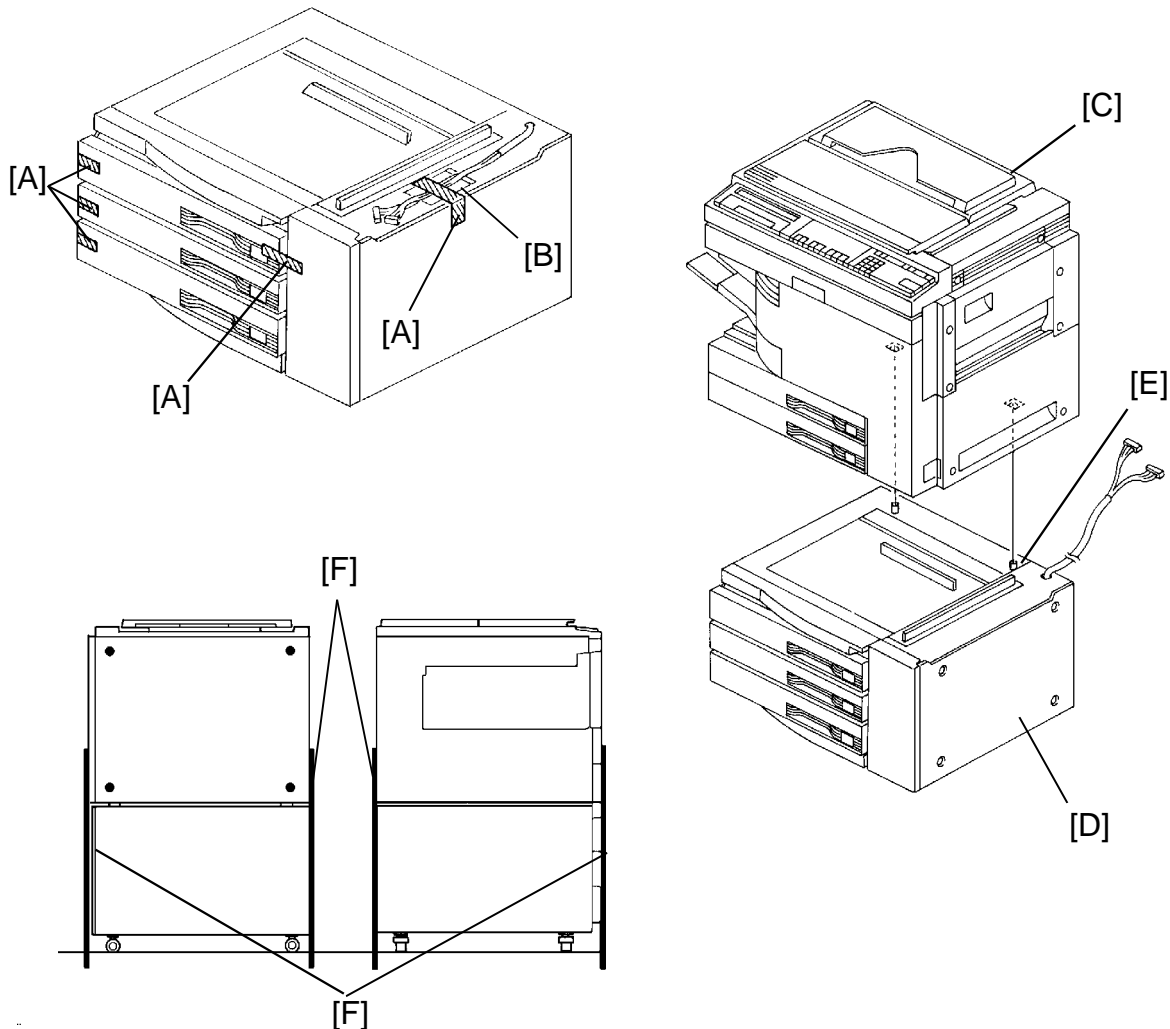
4. INSTALLATION

4.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

1. Harness Bracket	1
2. Harness Clamp	1
3. Philips Pan Head Screw --M4 x 8	2
4. Screw --M4 x 8.....	2
5. Shoulder Screw --M3	1
6. Shoulder Screw --M4	1
7. Rubber Ring	1
8. Tray Decals	1
9. New Equipment Condition Report (--17, --27 machines only)	1
10. Envelope for N.E.C.R. (--17 machine only)	1
11. Installation Procedure	1

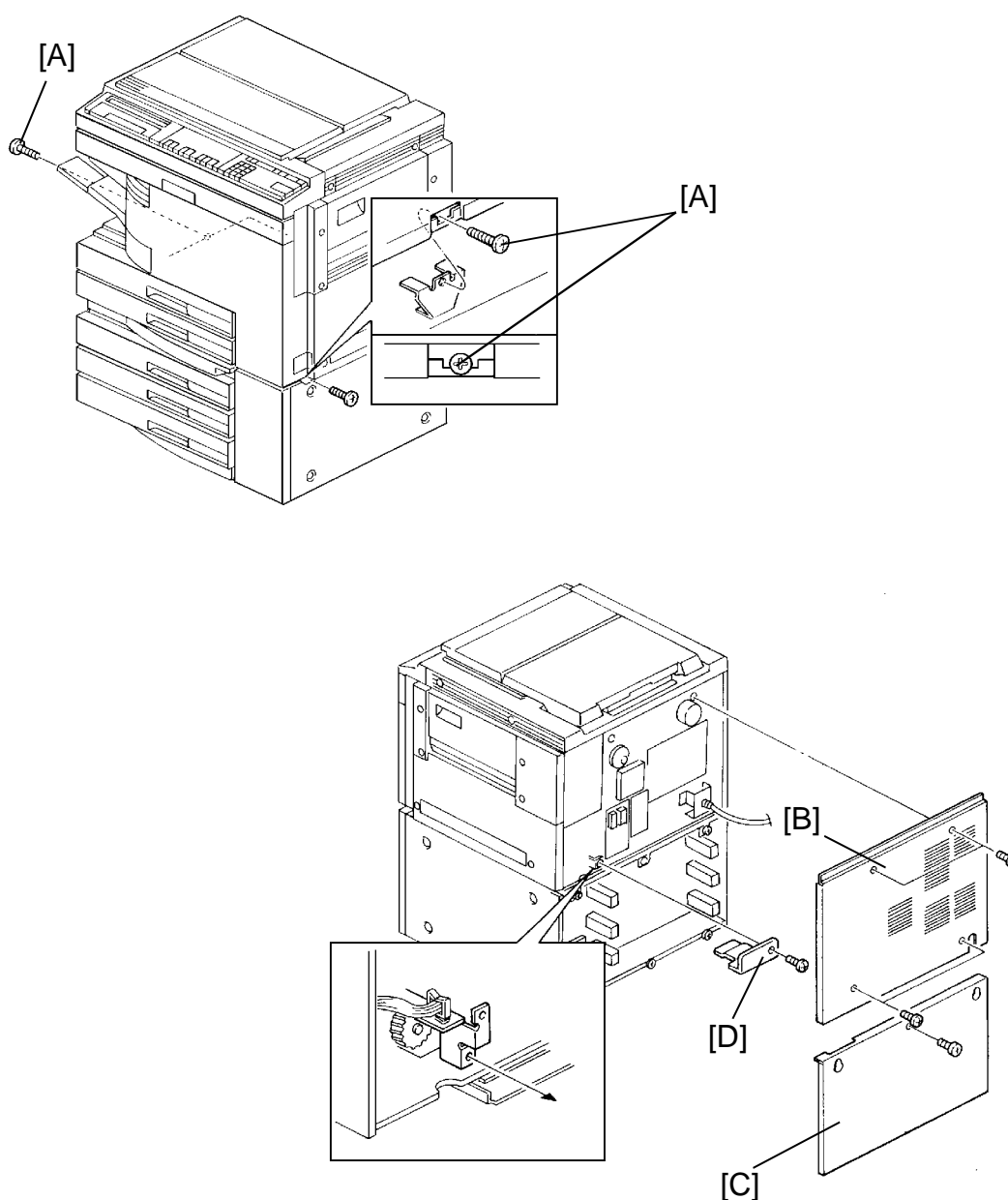
4.2 INSTALLATION PROCEDURE



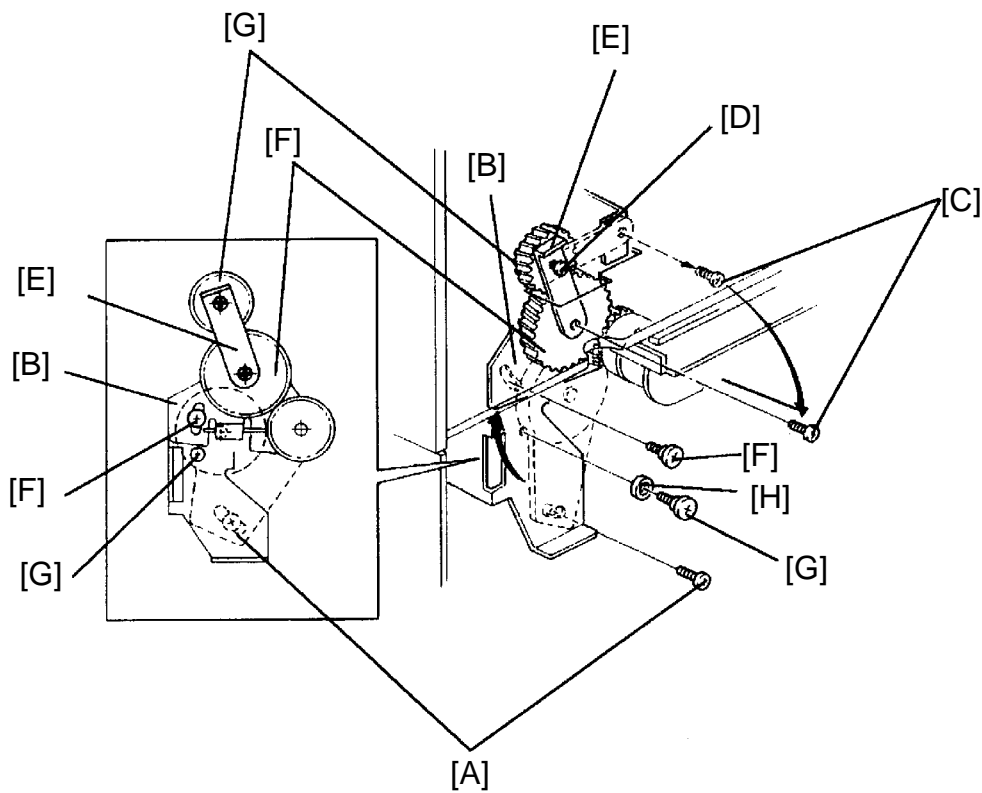
CAUTION: Unplug the copier power cord before starting the following procedure.

NOTE: Keep the shipping retainers after installing the machine. They will be reused if in the future the machine is transported to another location. Proper reinstallation of the shipping retainers is required in order to avoid any transport damage.

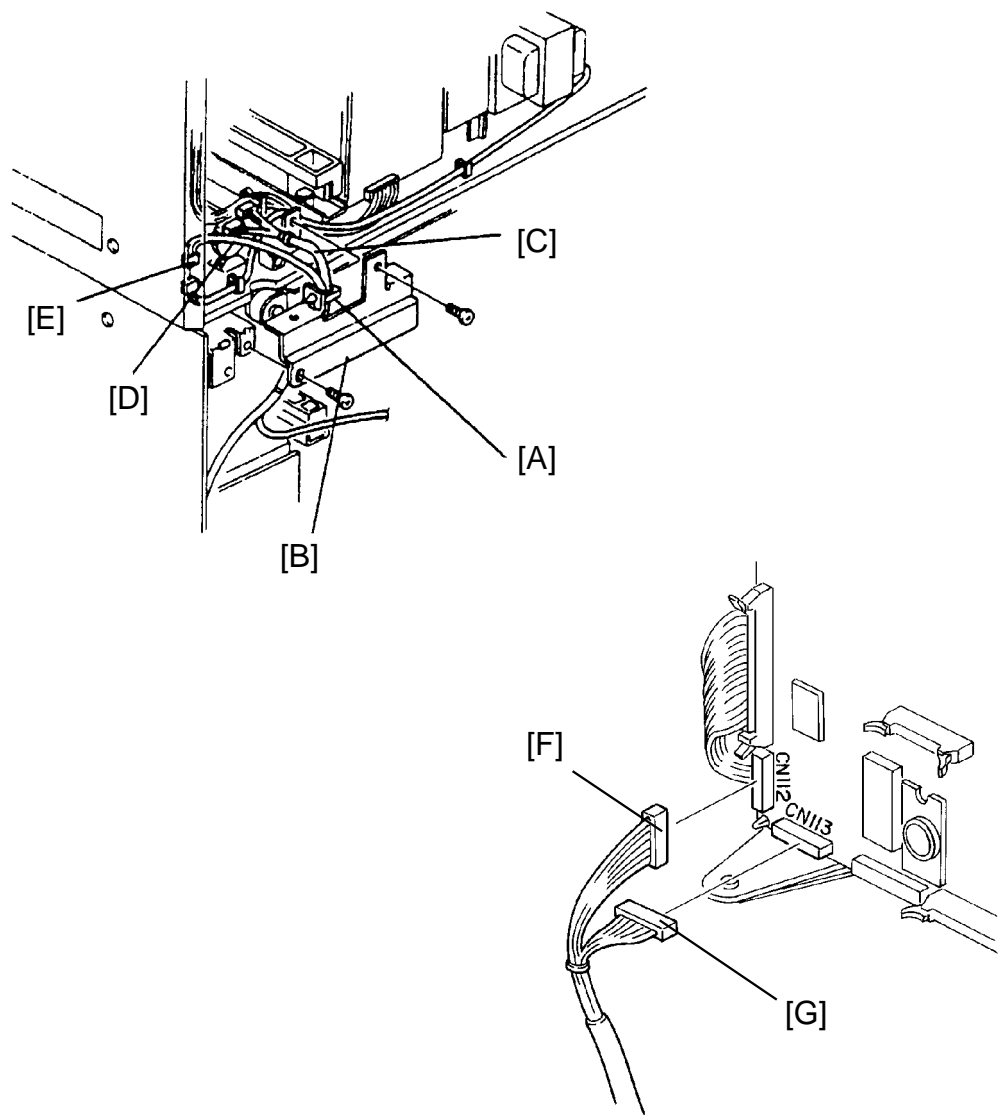
1. Remove the strips of tape [A]. (3 tray type: 4 strips, 1 tray type: 2 strips).
2. Remove the accessory bag [B] (1 tape).
3. Pull out the paper tray and remove a strip of tape and the foam block. Do this for all the paper trays.
4. Set the copier [C] onto the paper tray unit [D]. Align the 2 pins [E] of the paper tray unit with the holes in the base plate of the copier. At this time each side of the copier and paper tray unit will align with one another [F].



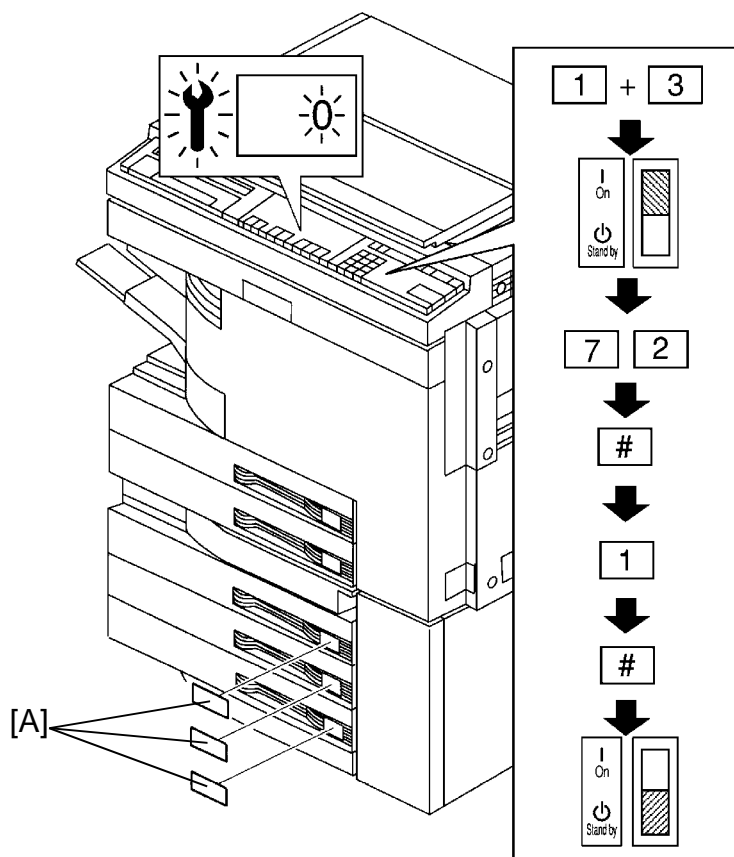
5. Fix the copier on the paper tray unit with 2 screws [A].
6. Remove the copier rear cover [B] (Remove 2 screws and loosen 2 screws) and paper tray unit rear cover [C] (remove 1 screw and loosen 2 screws).
7. Remove the shield plate [D] (1 screw) from the copier harness bracket.



8. Remove the screw [A] for the connecting gear bracket [B]. (Paper Tray Unit)
9. Remove one screw [C] and loosen another screw [D] to let the gear fixing bracket [E] rotate down. (Copier)
10. Engage the paper tray driven gear [F] with the paper tray drive gear [G] by raising the connecting gear bracket.
11. Secure the gear fixing bracket with the screws [C] and [D] on the shafts of the paper tray drive gear and the paper tray driven gear.
12. Fix the connecting gear bracket (1 shoulder screw –M3 [F] and 1 shoulder screw –M4 [G] with rubber ring [H]).

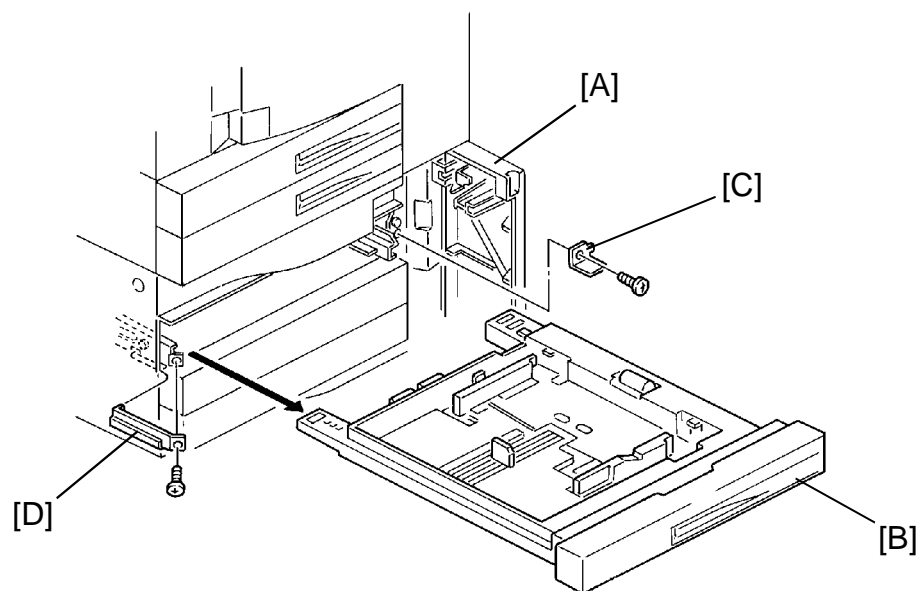


13. Set the wire saddle [A] on the harness bracket [B] and position the paper tray harness [C] and the tray heater harness [D] in the wire saddle.
14. Install the harness bracket [B] as shown (2 screws).
- NOTE:** Make sure that the screws are firmly secured so that the protective earth between the copier and the paper tray unit is maintained.
15. Couple the connector [E] of the tray heater harness with the copier and couple the connectors of the paper tray harness with the following connectors of the copier main control board:
- | | | |
|-------------------|-------|-------|
| 11p connector [F] | | CN112 |
| 8p connector [G] | | CN113 |
16. Follow the copier installation procedure.



17. Reinstall all the covers.
18. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.
19. Enter "72" using the number keys and then press the enter key.
20. Enter "1" using the number keys and then press the enter key.
21. Turn off the main switch.
22. Stick the tray decals [A] on the appropriate paper trays.
23. Turn on the main switch and check the machine operation and copy quality.

TRAY HEATER INSTALLATION (OPTION)



NOTE: The optional tray heaters keep copy paper dry. In humid environments, copy paper may crease as it comes out of the fusing unit. The heaters are available as service parts.

Required parts:

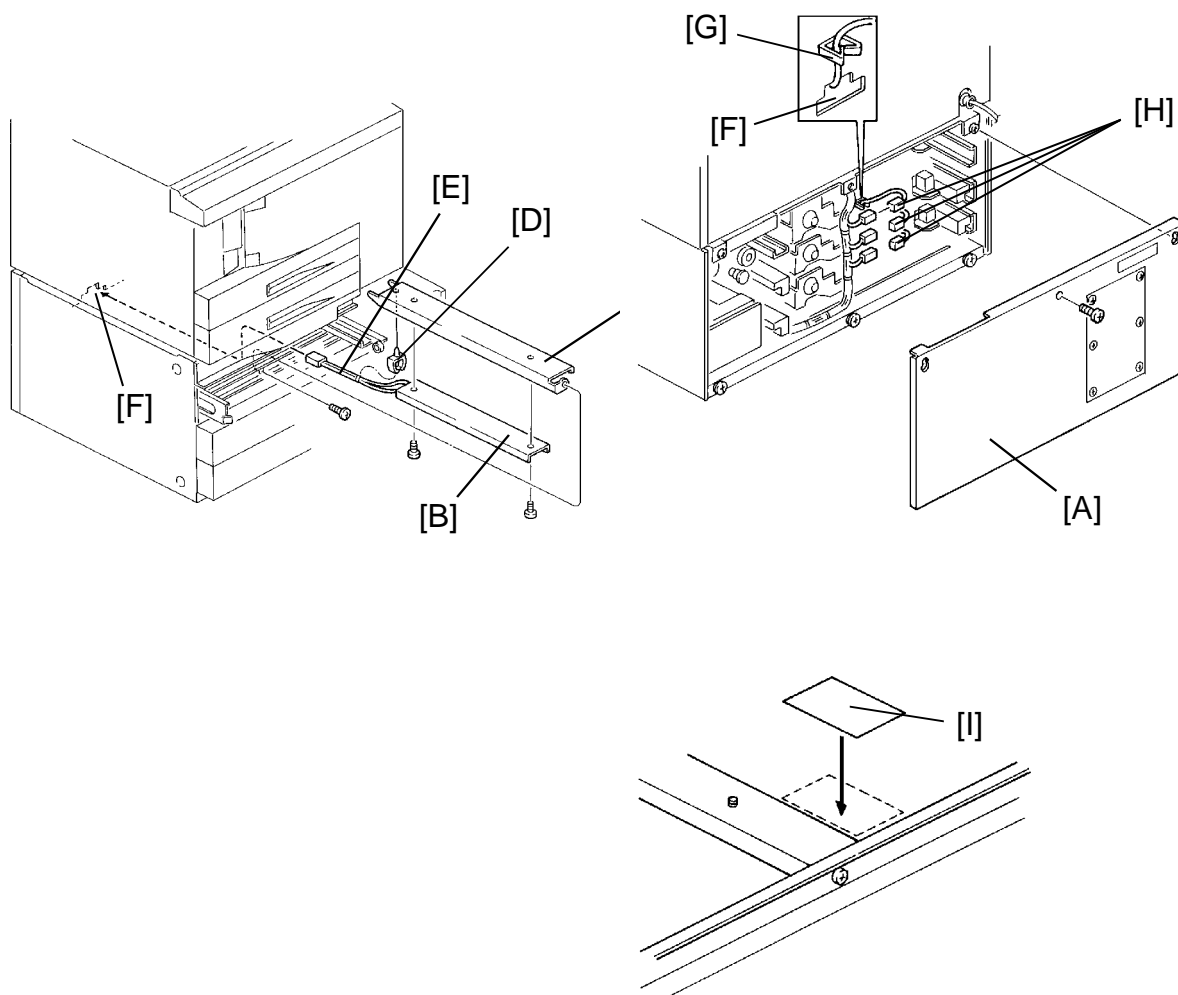
Part Number	Description	3-Tray Type	1-Tray Type
A0699500	Tray Heater Kit –115V	3 sets	1 set
A0699501	Tray Heater Kit –230V	3 sets	1 set

The contents of the kits are as follows:

Tray heater	1 piece
Tray heater bracket	1 piece
Wire saddle	1 piece
Philips pan head screw	3 pieces
Decal: High Temp.	1 piece

CAUTION: Unplug the copier power cord before starting the following procedure.

1. Open the paper tray front door [A].
2. Pull out the paper tray [B] and remove the tray stopper brackets [C], [D] on both sides as shown (1 screw each) and then remove the paper tray from the paper tray unit (3 paper trays for 3 tray type).



3. Remove the paper tray unit rear cover [A](remove 1 screw and loosen 2 screws).

NOTE: Repeat steps 4 to 6 three times for the 3-tray type.

4. Fix the tray heater [B] on the tray heater bracket [C] (2 screws), and set the wire saddle [D] and the heater harness [E] on the bracket as shown.
5. Pass the heater harness through the heater access hole [F] and the wire saddle [G] and install the tray heater assembly as shown (1 screw at the front).
6. Connect the heater connector [H] with the paper tray unit as shown (2P red).
7. Stick the warning: High temp. decal [I] on the plate, to the right of the tray heater bracket as shown.
8. Reassemble the paper tray unit.
9. Tell the customer that the copier main switch should be turned off and the power cord should not be unplugged at night. Otherwise, the tray heaters will not function.

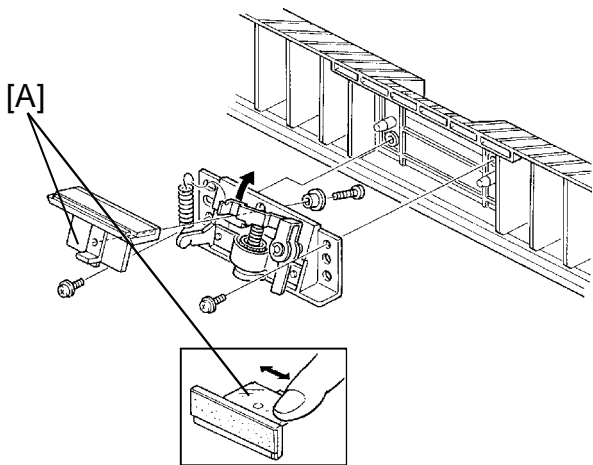
5. SERVICE TABLE

5.1 SERVICE REMARKS

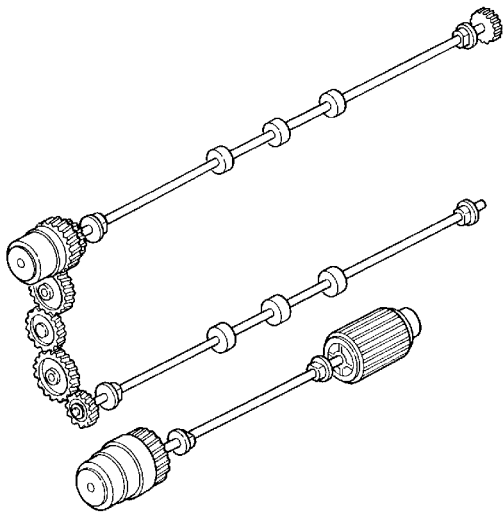
1. Do not touch the pick-up, feed, separation rollers and the friction pads with oily bare hands.
2. The side fences and the rear fence of the paper trays should be positioned correctly to align with the actual paper size. Otherwise, paper misfeeds may occur.
3. The friction pad should be replaced together with the friction pad holder and pad entrance seal as an assembly.
4. The friction pad assembly and the paper feed roller should be replaced as a set to maintain paper feed ability. (A worn out feed roller will provide incorrect friction pad pressure.)
5. The friction pad holder mounting bracket must be reinstalled on the original paper tray. Because the friction pad pressure is adjusted for each paper feed station independently at the factory.
6. The paper tray with the friction pad mechanism must be reinstalled at the original paper feeding station.
7. The friction pad pressure should not be adjusted in the field.

5.2 PM TABLE

PAPER TRAY UNIT (A325/A326)					
	EM	80K	160K	240K	NOTE
Paper Feed Roller	C	R	R	R	Water, Replace with friction pad ass'y as a set.
Friction Pad Ass'y	C	R/L	R/L	R/L	Water/Albania 2 grease Refer to NOTE 1
Paper Tray Bottom Plate Pad		R	R	R	Water
Drive Belt		I	I	I	Replace if necessary
Bushings			L		Spindle oil Refer to NOTE 2



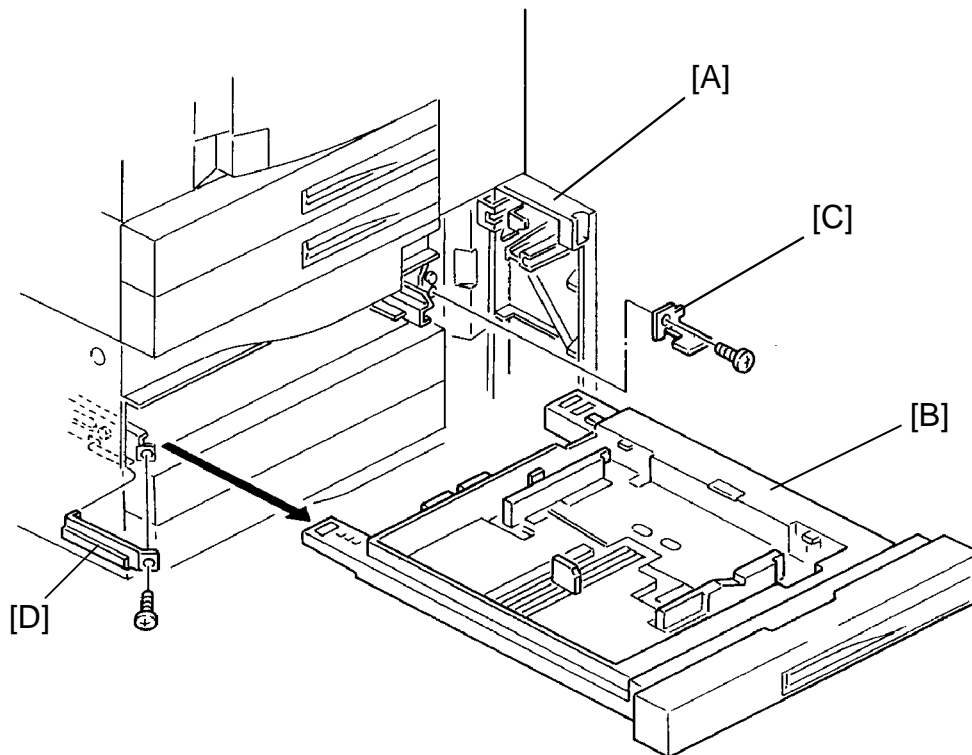
NOTE 1: Friction Pad Assembly
Replace the friction pad assembly [A] every 80k. Then, lubricate the pad holder with ALBAMIA 2 grease as shown.



NOTE 2: Relay Rollers and Tray Paper Feed

6. REPLACEMENT AND ADJUSTMENT

6.1 PAPER TRAY REMOVAL



1. Open the paper tray unit door [A].
2. Pull out the paper tray [B] and remove the tray stopper brackets [C, D] on both sides as shown (1 screw each) and then remove the paper tray from the paper tray unit.

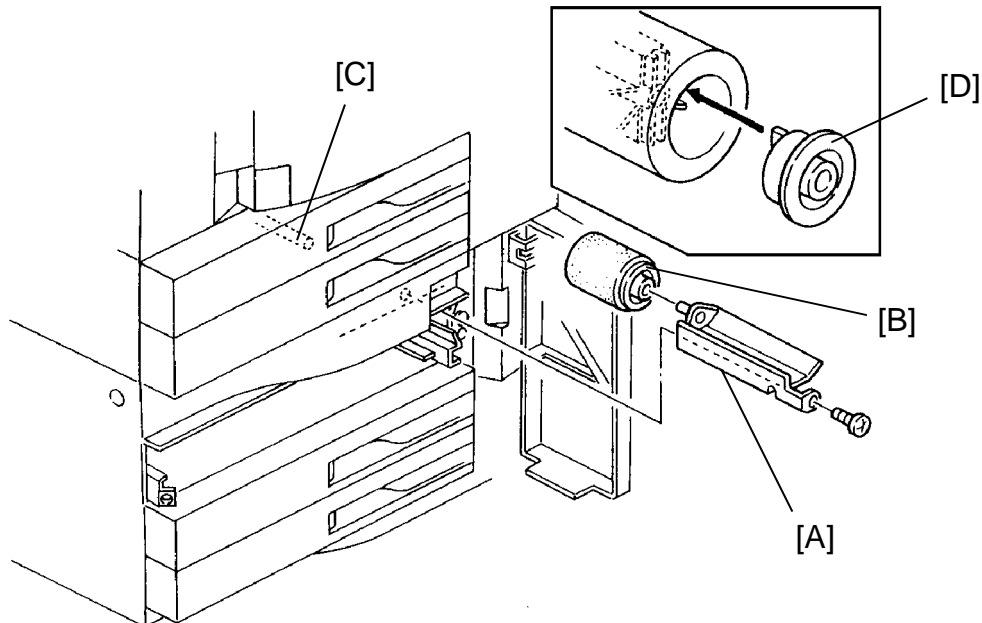
NOTE: When removing several paper trays at a time, make sure that the paper tray is returned to the original feeding station. To identify the original feeding station, each paper tray has its own decal on the right side.

C: Paper Tray Unit - Tray 1
D: Paper Tray Unit - Tray 2
E: Paper Tray Unit - Tray 3

6.2 PAPER FEED ROLLER REPLACEMENT

NOTE: Replace the paper feed roller and the friction pad assembly as a set to maintain paper feeding ability.

(1) Feed Roller Replacement

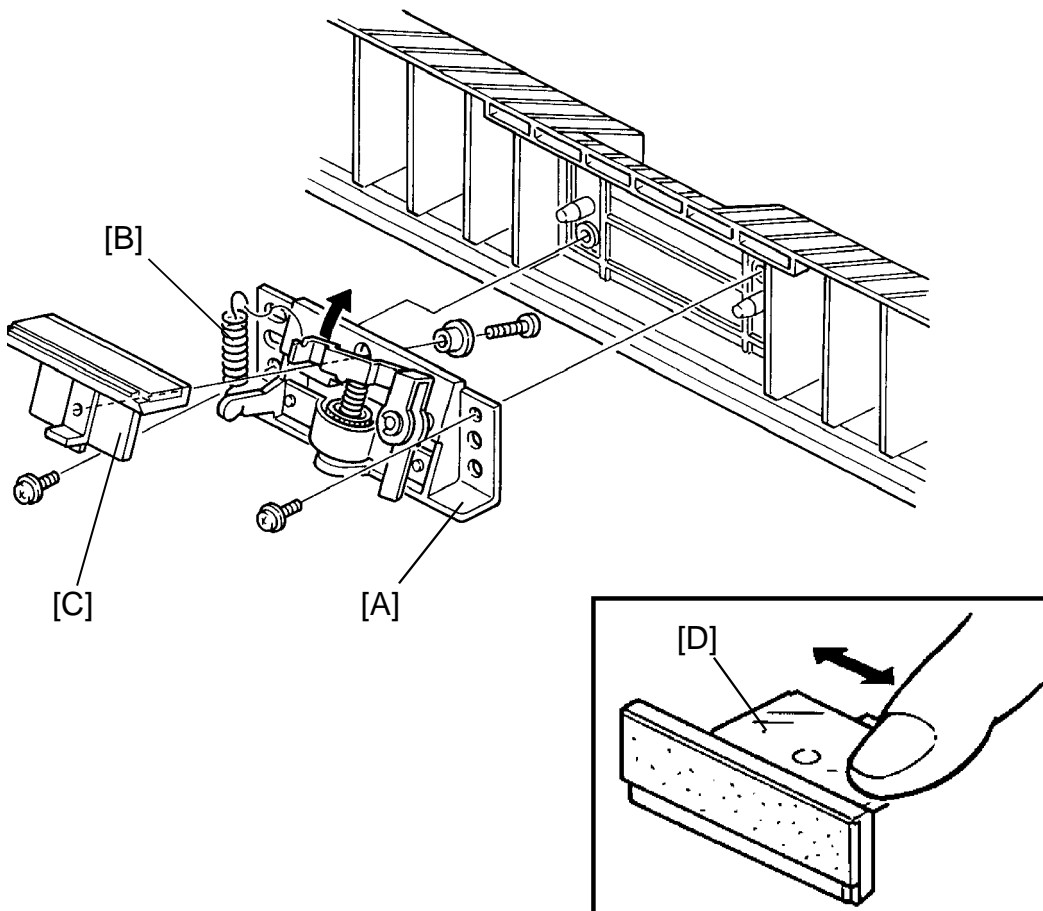


1. Remove the paper tray (see Paper Tray Removal).
2. Remove the feed roller guide [A] (1 screw).
3. Remove the feed roller assembly [B] from the shaft [C].
4. Replace the feed roller hub [D] from the old to the new feed roller.

NOTE: When replacing the feed roller hub, make sure that the projections of the hub engage with the grooves of the feed roller.

5. Reassemble the copier.

(2) Friction Pad Replacement

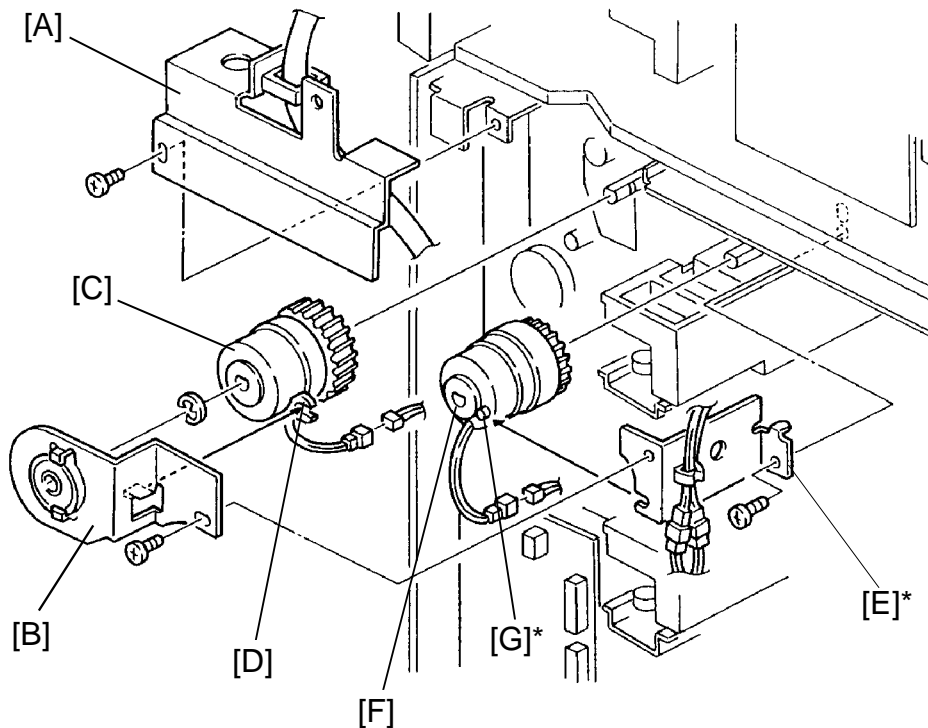


1. Pull out the paper tray.
2. Remove the friction pad holder mounting bracket [A] from the paper tray (2 screws with washer).
3. Unhook the spring [B] from the pressure release lever.
4. Remove the friction pad assembly [C] from the mounting bracket (1 screw and 1 swivel bushing).
5. Lubricate the sliding surface [D] of the new friction pad assembly slightly with the grease "Albania 2".
6. Install the new friction pad assembly on the mounting bracket and reassemble the paper tray.

NOTE: If the friction pad assembly is replaced for several paper trays at a time, make sure that the friction pad holder mounting bracket is placed back to the original paper tray.

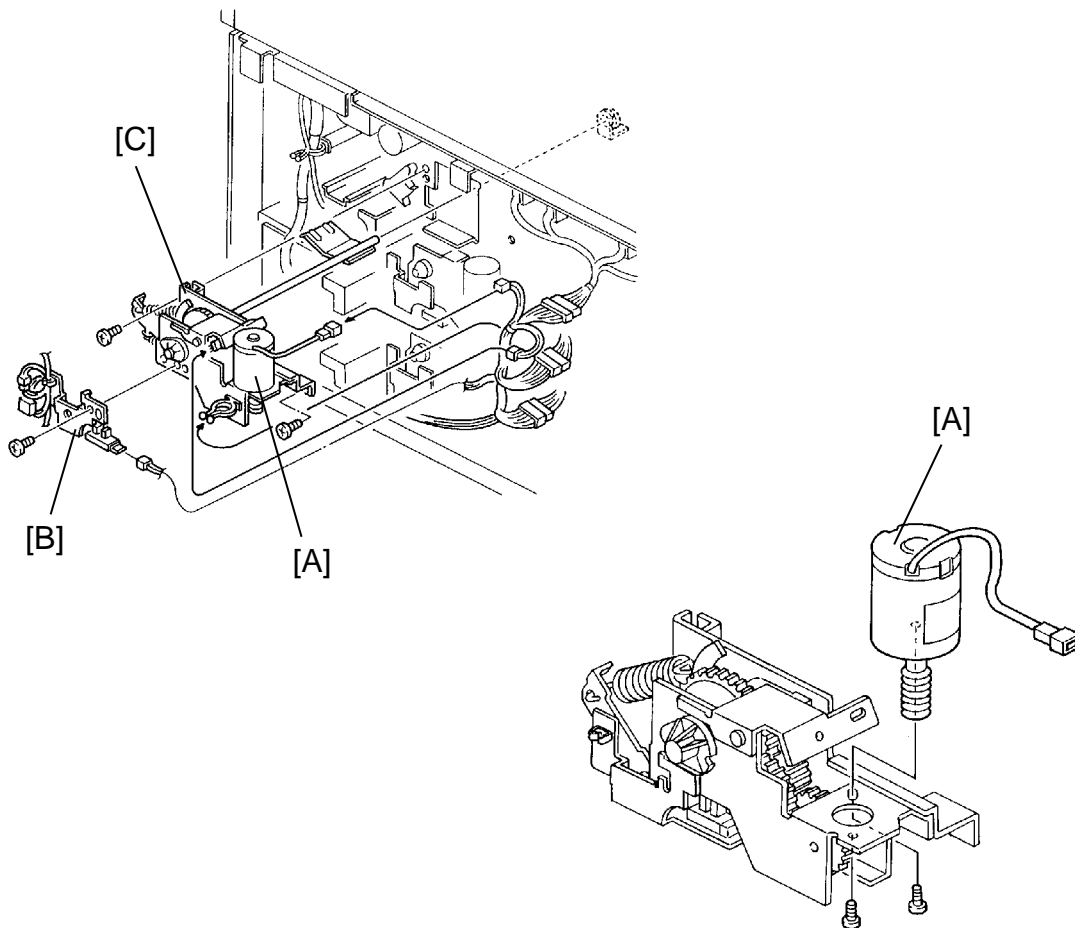
To identify the original position, the mounting bracket and the paper tray have the identical decals such as "C", "D", "E".

6.3 TRAY UNIT DRIVE AND PAPER FEED CLUTCH REPLACEMENT



1. Remove the copier and tray unit rear covers.
2. Remove the harness bracket [A] (2 screws).
NOTE: When reinstalling the bracket, make sure that the screws are firmly secured so that the protective earth between the copier and the paper tray unit is maintained.
3. Remove the bearing holder bracket [B] (1 screw).
4. Remove the tray unit drive clutch [C] (1 E-ring and 1 connector).
NOTE: When reinstalling the clutch, make sure that the clutch stopper groove [D] engages with the stopper.
5. Remove the stopper bracket [E] (1 screw).
6. Remove the paper feed clutch [F] (1 connector and 1 wire saddle).
NOTE: When reinstalling the clutch, make sure that the clutch stopper pin [G] engages with the groove of the stopper bracket.

6.4 TRAY LIFT MOTOR REPLACEMENT



1. Remove the tray rear cover (remove 1 screw and loosen 2 screws).

= 1 tray type =

2. Remove the tray lift motor [A] (2 screws and 1 connector).

= 3 tray type =

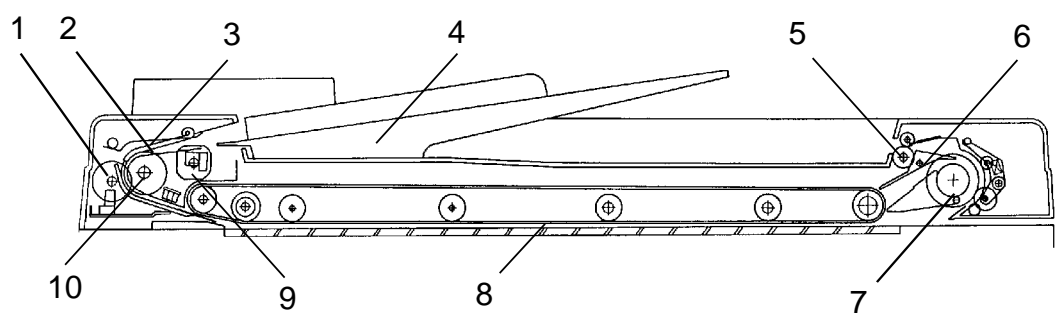
3. Remove the paper tray from the paper tray unit (see paper tray removal).
4. Remove the tray set sensor bracket [B] (1 screw and 1 connector).
5. Pull out the paper lift motor assembly [C] from the paper tray unit (2 screws, 2 connectors, and 1 wire clamp).
6. Remove the tray lift motor [A] (2 screws).

SECTION 8
DOCUMENT FEEDER
(DF56)

1. SPECIFICATIONS

Original Size:	Max. 11" x 17" Min. 5 1/2" x 8 1/2"
Original Weight:	11~34lb -SADF. ADF 14~28lb -SADF. ADF. ARDF
Original Feed Mode:	Automatic feed ADF Manual feed one by one SADF Auto Reverse Feed ARDF
Original Table Capacity:	Max 50 sheets 8 1/2" x 11 14lb
Original Separation:	Feed and Friction Belts
Original Transport:	One flat belt
Original Stop System:	Dc servo motor control system
Copying Speed:	Continuous copy 33 copies/minute (8 1/2" x 11" sideways) Single copy 31 copies/minute (8 1/2" x 11" sideways)
Power Source:	24V from copier, 1.8A
Power Consumption:	45W
Dimensions (W x D x H):	(26.4" x 18.5" x 4.8")
Weight:	Approximately 21lb

2. MECHANICAL COMPONENT LAYOUT



1. Pulse Generator Disk

2. Friction Belt

3. Pick-up Lever

4. Original Table

5. Exit Roller

6. Inverter Pawl

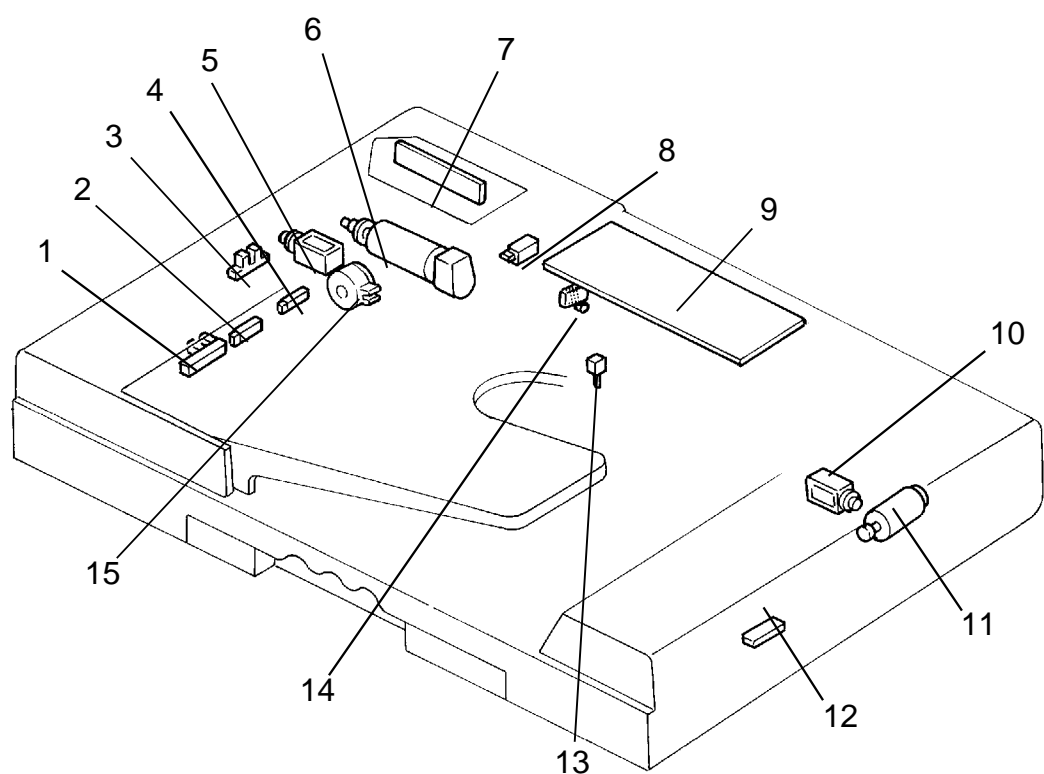
7. Inverter Roller

8. Transport Belt

9. Pick-up Roller

10. Feed Roller

3. ELECTRICAL COMPONENT LAY OUT



- | | |
|---------------------------|----------------------------|
| 1. Original Set Sensor | 9. DF Main Board |
| 2. Registration Sensor | 10. Inverter Solenoid |
| 3. Pulse Generator Sensor | 11. Feed-out Motor |
| 4. Original Width Sensor | 12. Feed-out Sensor |
| 5. Pick-up Solenoid | 13. Original Select Switch |
| 6. Belt Drive Motor | 14. Lift Switch |
| 7. Indicator Panel | 15. Feed-in Clutch |
| 8. DF Position Sensor | |

4. ELECTRICAL COMPONENT DESCRIPTIONS

MOTORS

NAME	FUNCTION	LOCATION
Belt Drive Motor	DC servomotor that drives to the transport belt and feed-in system (pick-up roller, feed roller, pull-out roller and relay roller).	6
Feed-out Motor	DC servomotor that drives the feed-out unit of the DF.	11

SOLENOIDS

NAME	FUNCTION	LOCATION
Pick-up Solenoid	Energizes to press the pick-up lever against the stack of originals in preparation for original feed-in.	5
Inverter Solenoid	Energizes to invert the original when copying two sided originals.	10

SWITCHES

NAME	FUNCTION	LOCATION
Lift Switch	Informs the CPU when the DF is lifted and also serves as the jam reset switch for the DF.	14
Original Select Switch	Selects thick original mode or thin original mode.	13

SENSORS

NAME	FUNCTION	LOCATION
Original Set Sensor	Informs the main system’s CPU that originals have been placed and causes the Insert Original indicator to go out.	1
Registration Sensor	Sets original stop timing and measures original length.	2
Original Width Sensor	Determines the width of the originals.	4
DF Position Sensor	Informs the CPU when DF is being closed so that APS sensor can begin checking the original size.	8
Pulse Generator Sensor	Generates pulses used to measure the original length.	3
Feed-out Sensor	Checks for original misfeeds and sets original stop timing when in auto reverse mode.	12

MAGNETIC CLUTCH

NAME	FUNCTION	LOCATION
Feed-in Clutch	Energizes to rotate the feed roller, pull-out rollers, and relay roller	15

PRINTED CIRCUIT BOARDS

NAME	FUNCTION	LOCATION
DF Main Board	Controls all DF functions.	9
Indicator Panel Board	Contains operator indicators.	7

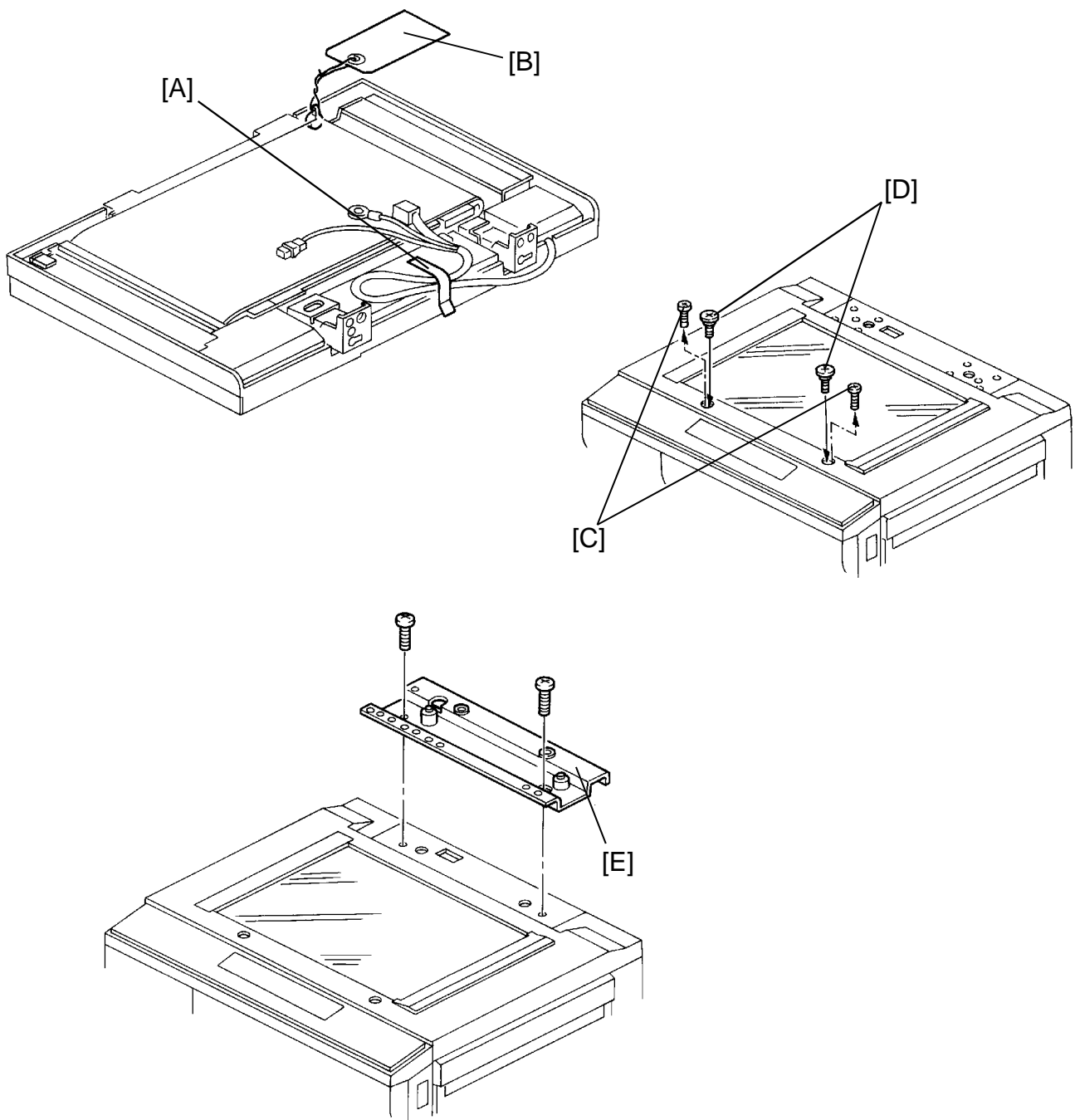
5. INSTALLATION

5.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

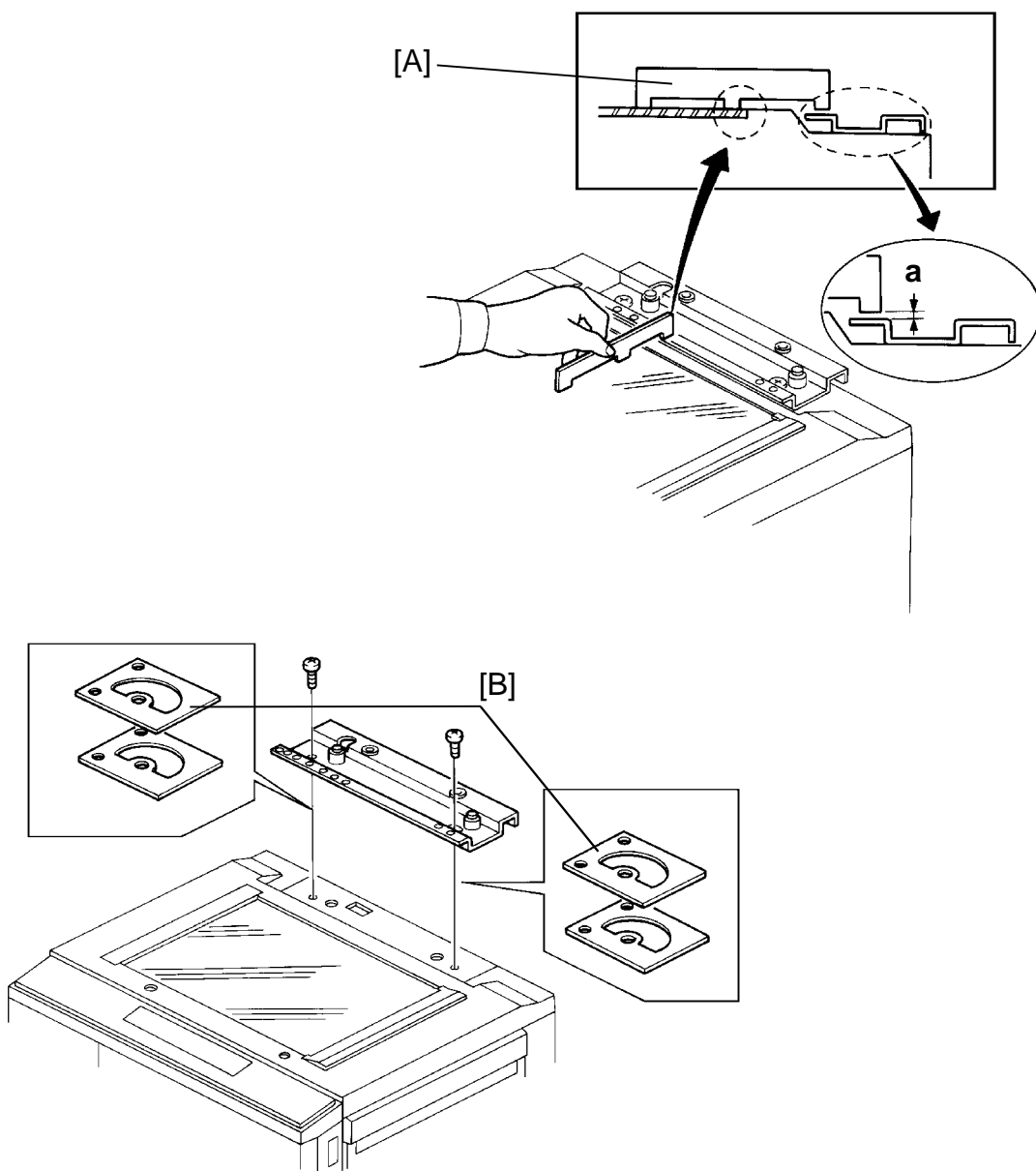
1. Installation Procedure.....	1
2. DF Test chart.....	1
3. DF Mounting Bracket.....	2
4. Panhead Screw 4 x 14 .	1
5. Original Table	1
6. Angle Stopper	1
7. Spacer 0.5 mm	1
8. Spacer 0.2 mm	1
9. E-plate	1
10. Lift Switch Actuator.....	1
11. Cover Size Actuator.....	1
12. Bushing.....	1
13. Toothed Washer	1
14. Ground Screw	1
15. Stud Screw	2
16. Plastic Clamp.....	1
17. Panhead Screw 4 x 6	5
18. Shoulder Screw 4 x 5	4
19. NECR	1
20. NECR-Envelope (U.S.A. only).....	1

5.2 INSTALLATION PROCEDURE



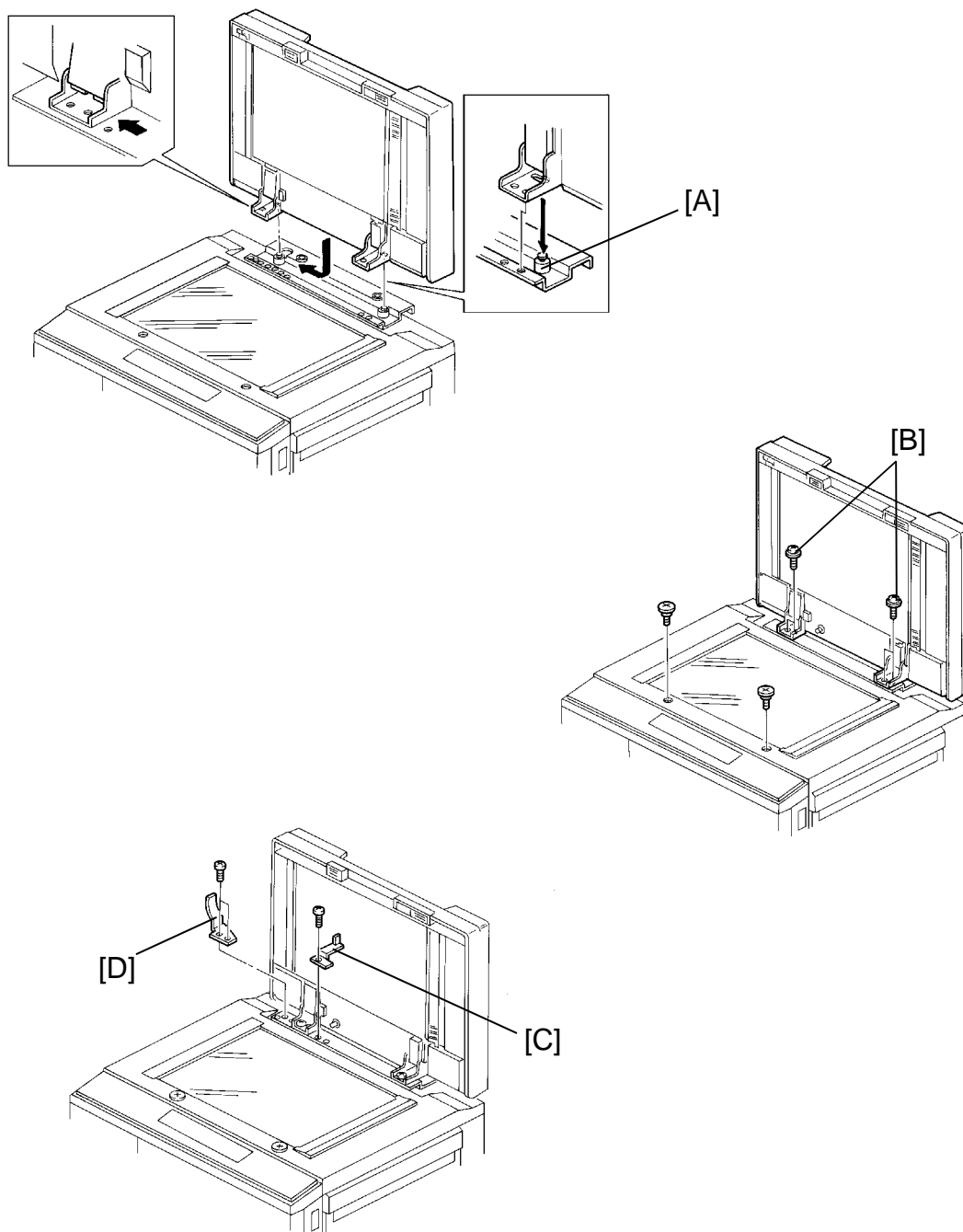
CAUTION: Before installing the document feeder (DF), make sure that the copier is unplugged.

1. Remove the strip of tape [A] and the shipping retainer [B] (1 screw).
2. Remove the two pan head screws [C] and replace them with flat shoulder screws [D].
3. Install the DF mounting bracket [E] (2 screws).

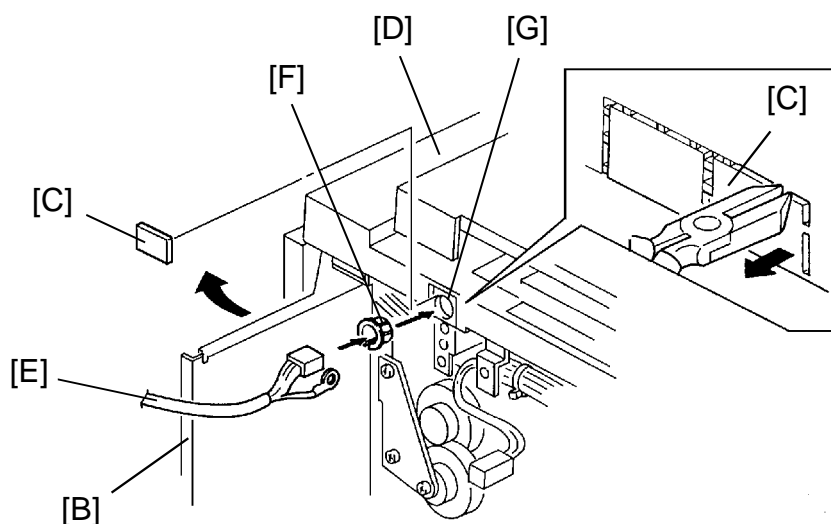
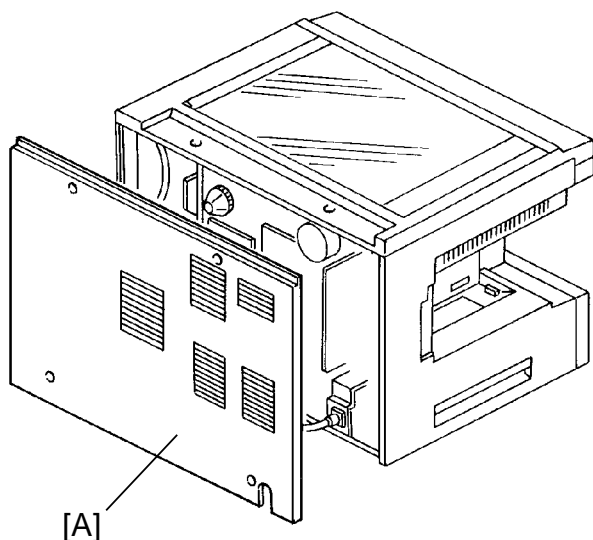


4. Adjust the height of the DF mounting bracket.

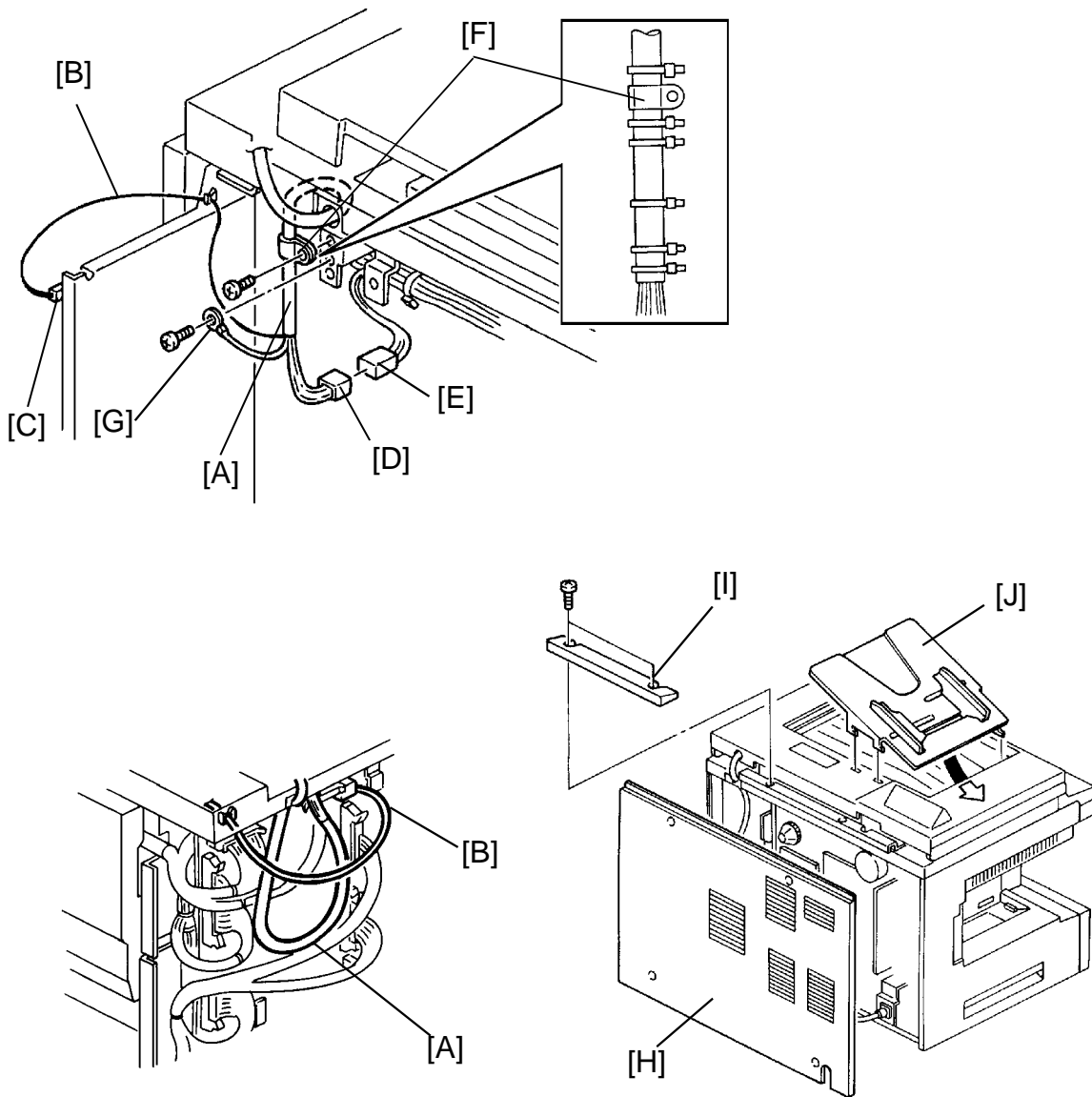
- 1) Set the E-plate [A] on the exposure glass as shown and measure the clearance "a" between the DF mounting bracket and the E-plate.
- 2) Remove the DF mounting bracket and insert the spacers [B] (0.2 mm and 0.5 mm) to adjust the clearance "a" to between 4.0 mm and 4.5 mm.
- 3) After securing the mounting bracket, reconfirm the clearance "a".



5. Mount the DF on the DF mounting bracket by aligning the holes in the DF and the pins [A] on the mounting bracket, then slide the DF to the left as shown.
6. Secure the DF to the DF mounting bracket [B] (4 screws with flat washer).
7. Install the lift switch actuator [C] (1 screw -- M3 x 4).
8. Install the sensor actuator [D] (2 screws).

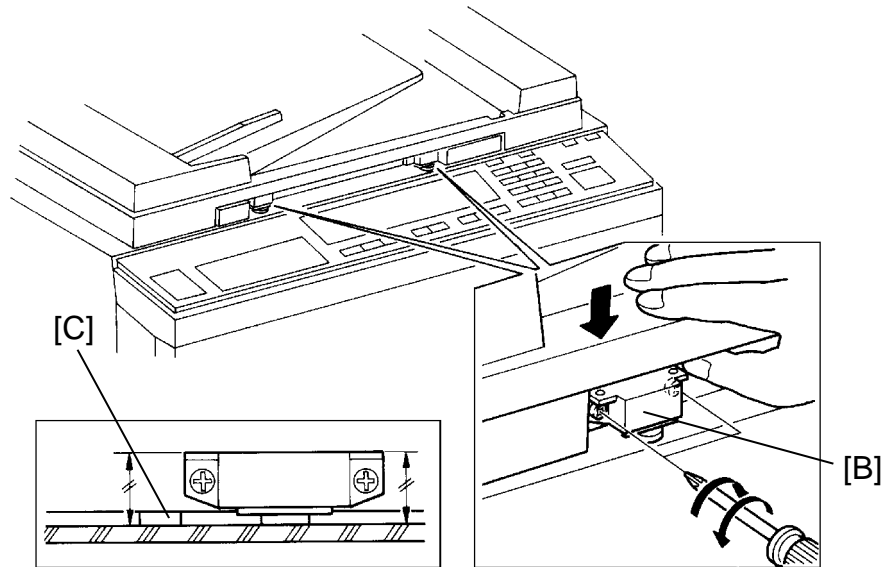
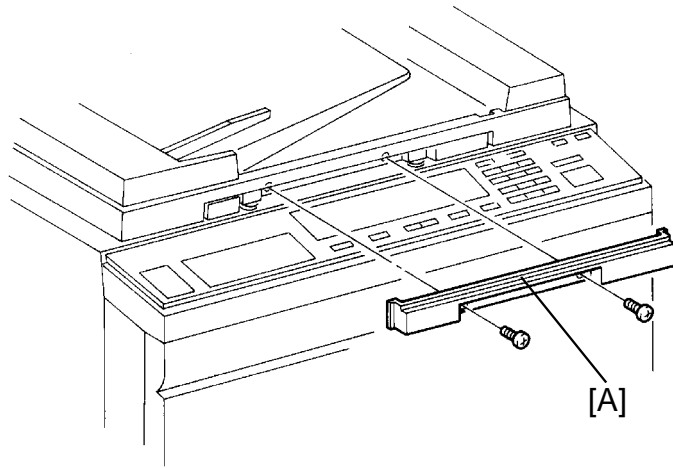


9. Remove the rear cover [A] (remove 2 screws and loosen 2 screws).
10. Swing out the main control board assembly [B] (1 screw).
11. Remove the cover plate [C] from the top cover [D] with cutting pliers.
12. Run the DF harness [E] through the bushing [F] and bracket hole [G], then secure the bushing.

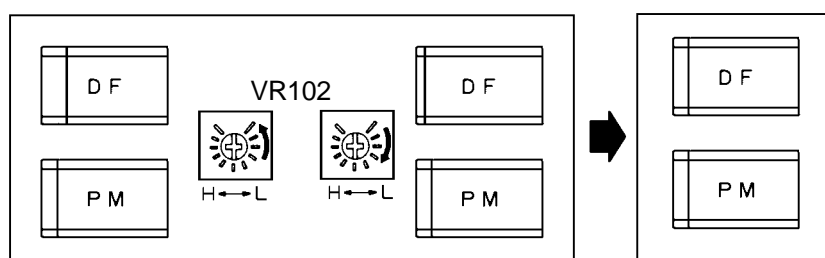
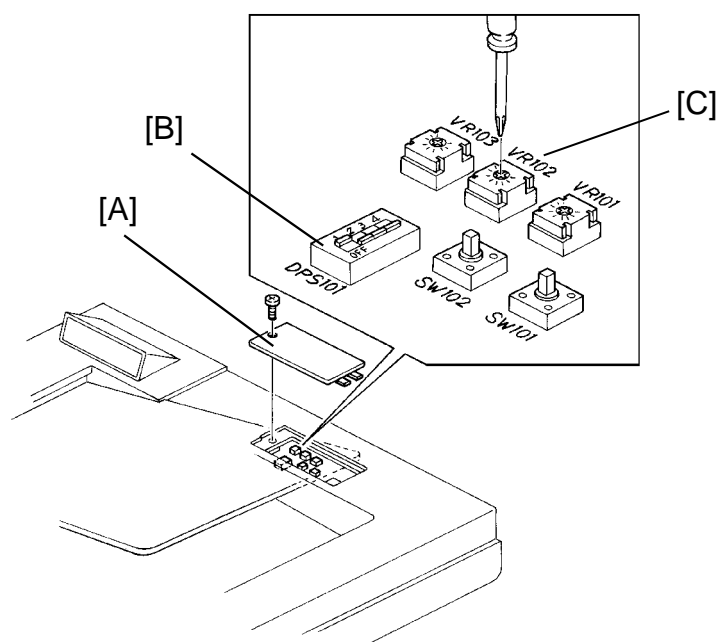


13. Set the DF harness [A] as follows:
 - (1) Fiber optics cable [B] — CN106 (Main control board) [C]
 - (2) 4P connector (White) [D] — 4P connector (White/copier) [E]
14. Secure the DF harness with a plastic clamp [F] (1 screw) as shown.
15. Secure the protective earth wire [G] (1 grounding screw and 1 toothed washer).
16. Close and secure the main control board assembly.

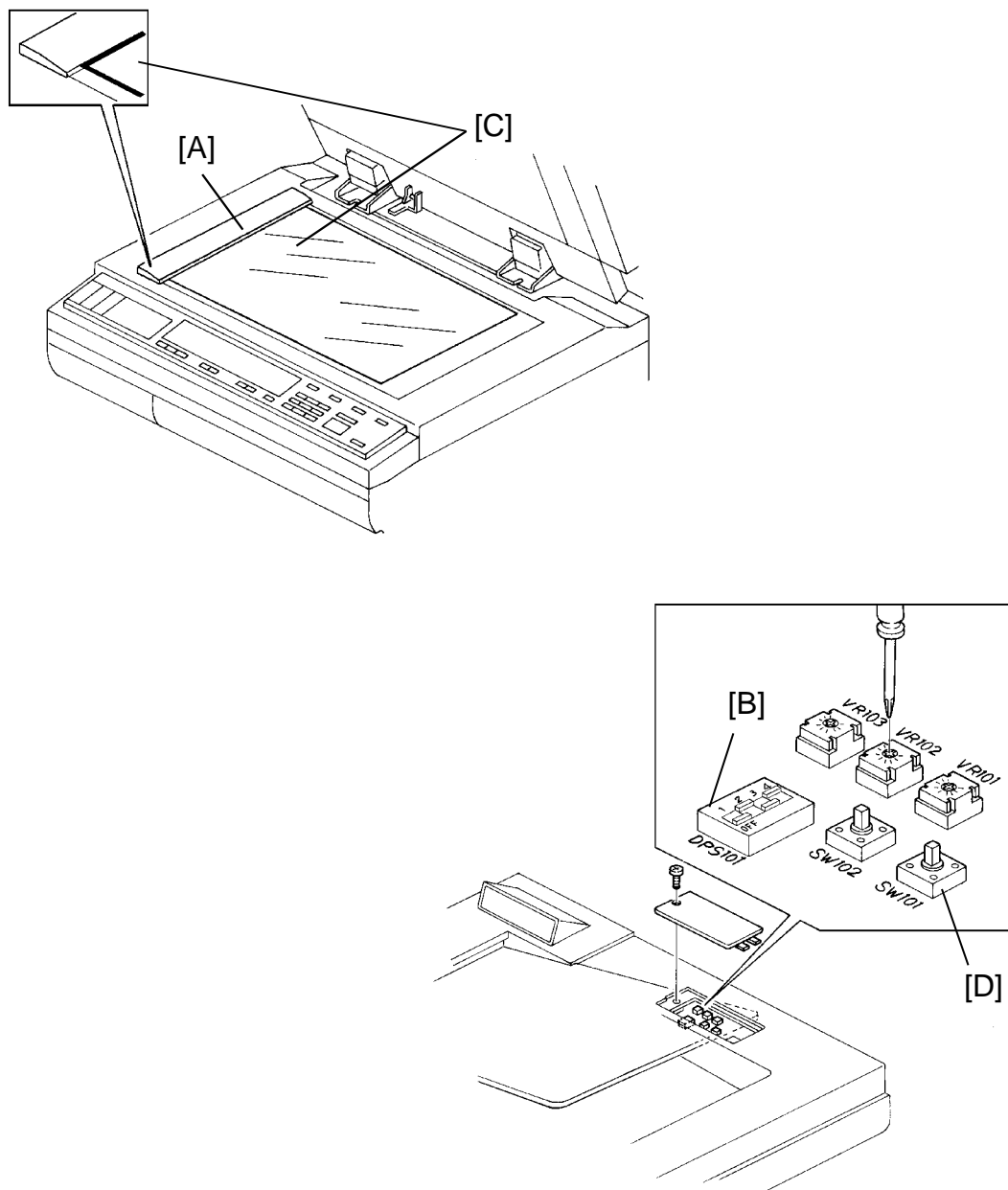
NOTE: Place the DF harness in front of the main control board as shown.
17. Reinstall the rear cover [H].
18. Install the angle stopper [I] (2 screws), and the original table [J].



19. Remove the grip cover [A] (2 screws).
20. Adjust the height of the magnet catch on each side. Repeat the following procedure for each magnet catch:
 - 1) Loosen the screws securing the magnet catch [B] (2 screws).
 - 2) Close the document feeder and tighten the magnet catch screws when the rubber stopper [C] touches the exposure glass.
21. Reinstall the grip cover.



22. Remove the DF main control board cover [A] (1 screw), and confirm that the setting of DIP SW 101 [B] on the main control board is as follows:
 ON: 101-1
 OFF: 101-2,3,4
23. Plug in the copier and turn on the main switch.
24. Confirm the original registration in one-sided original mode as follows:
 - 1) Make a copy of the test sheet in platen mode (A4 / 8 1/2" x 11" sideways).
 - 2) Confirm that the original select switch is set to the thin original mode and make a copy in DF mode (A4 / 8 1/2" x 11" sideways).
 - 3) Compare the registration of the copy in platen mode with that in the DF mode, and confirm that the difference is within 2.5 mm.
 - 4) If the difference is more than 2.5 mm, adjust VR102 [C] to change the original-stop timing according to the above illustration.



25. Confirm the original registration in two-sided original mode as follows:

NOTE: a) An original should stop pressed against the left scale [A] in DF two-sided original mode.

b) The position of the original select switch does not matter.

1) Set DIP SW101 [B] on the main control board as follows:

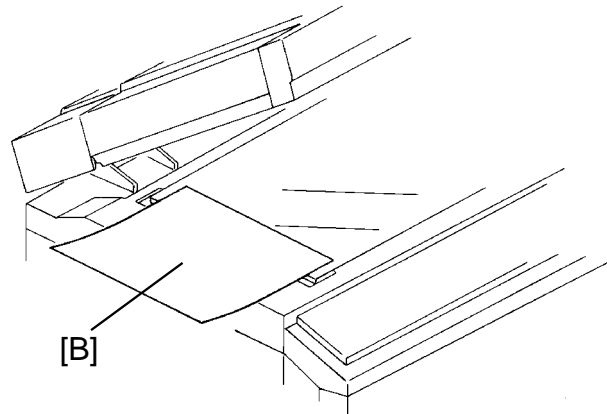
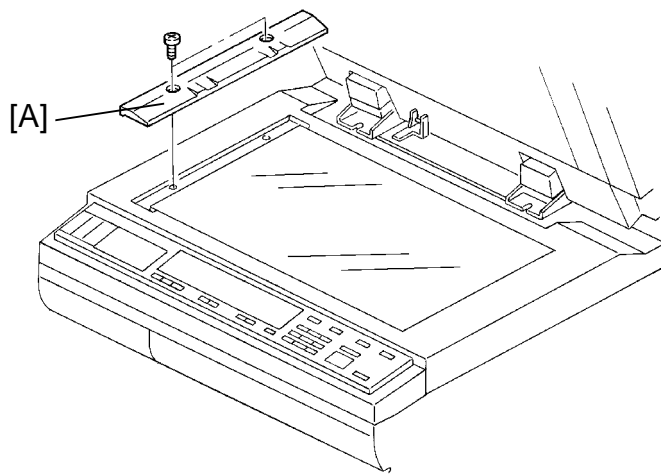
ON: 101--2, 4

OFF: 101--1, 3

2) Set a sheet of A3/11" x 17" paper [C] on the DF then press SW 101 [D] to feed the paper into the DF belt section.

3) When the paper stops on the exposure glass after the inversion, open the DF slowly so that the paper does not move from the stop position.

4) Confirm that the paper has stopped against the left scale.



5) If the paper has not stopped against the left scale [A], remove the left scale (2 shoulder screws).

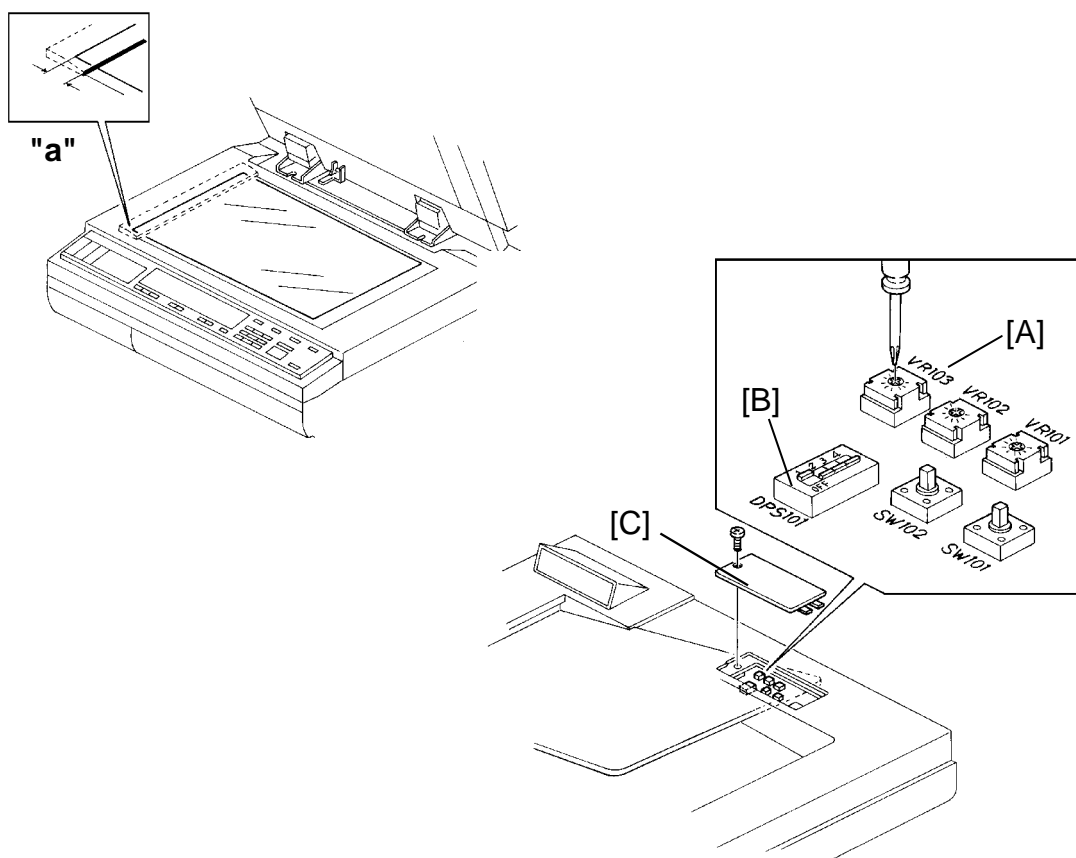
6) Set a sheet of A4 / 8 1/2" x 11" paper [B] sideways on the exposure glass edge as shown.

NOTE: This sheet of paper prevents the original from jamming at the edge of the exposure glass when it is fed in without the left scale.

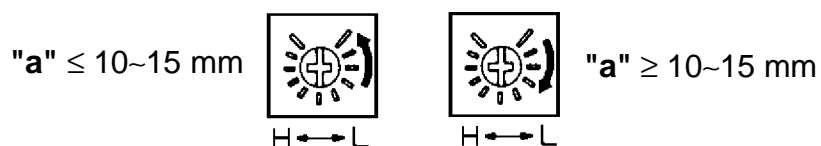
7) Set a sheet of A3 / 11" x 17" paper on the DF then press SW101.

8) Just after the paper is fed in, gently pull off the sheet set in step 6).

9) When the paper (set in step 7) stops on the exposure glass after the inversion, open the DF slowly so that the paper does not move from the stop position.



VR 103



10) If the paper did not stop at the correct position (" a "=10~15 mm), turn VR 103 [A] to correct the original stop timing.

NOTE: Turning VR103 clockwise results in the original stopping later.

11) Set back DIP SW101 [B] on the main control board as follows:
ON: 101-1
OFF: 101-2,3,4

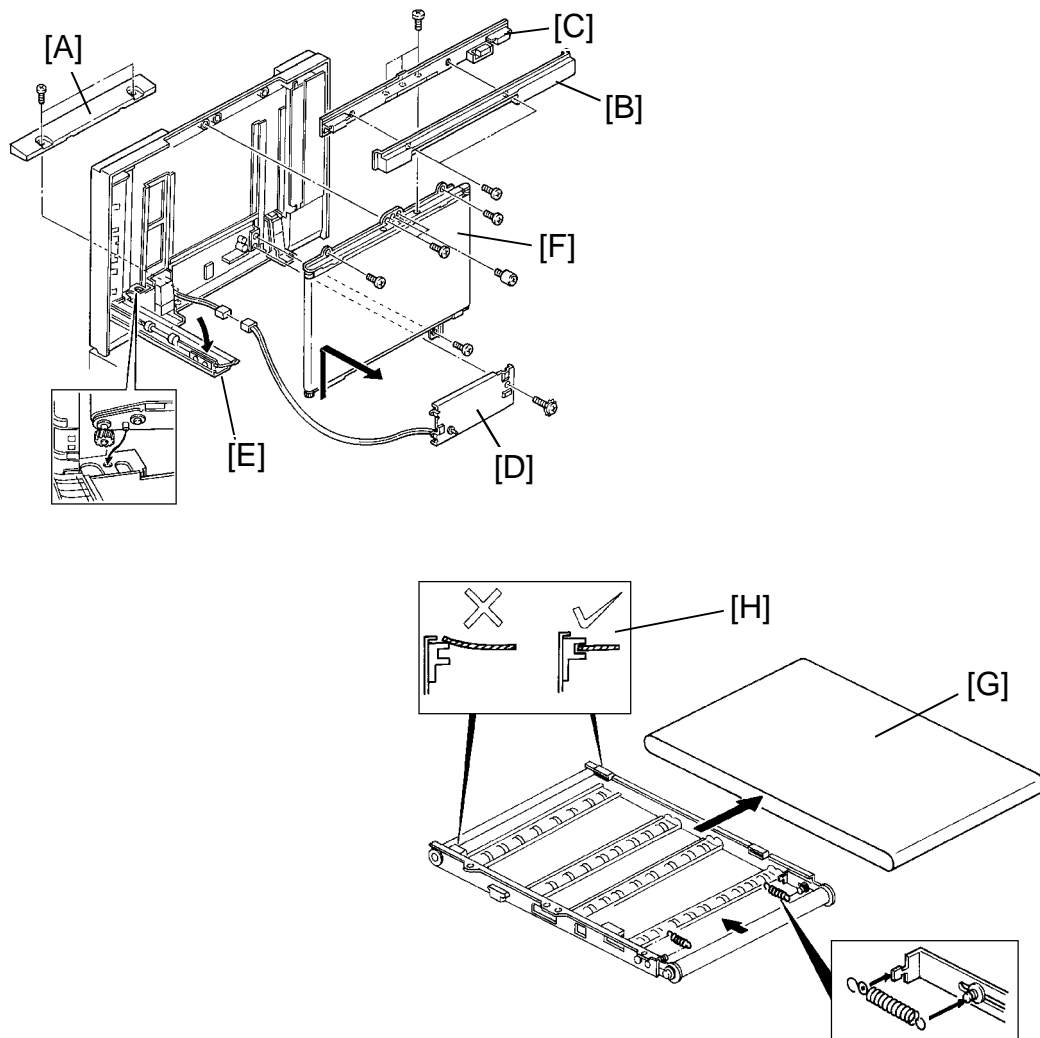
12) Reinstall the DF main control board cover [C] and the left scale.

26. Check the operation of the DF.

27. Set the original select switch to the thin paper mode (normal position), and explain the function of this switch to the customer.

6. REPLACEMENT AND ADJUSTMENT

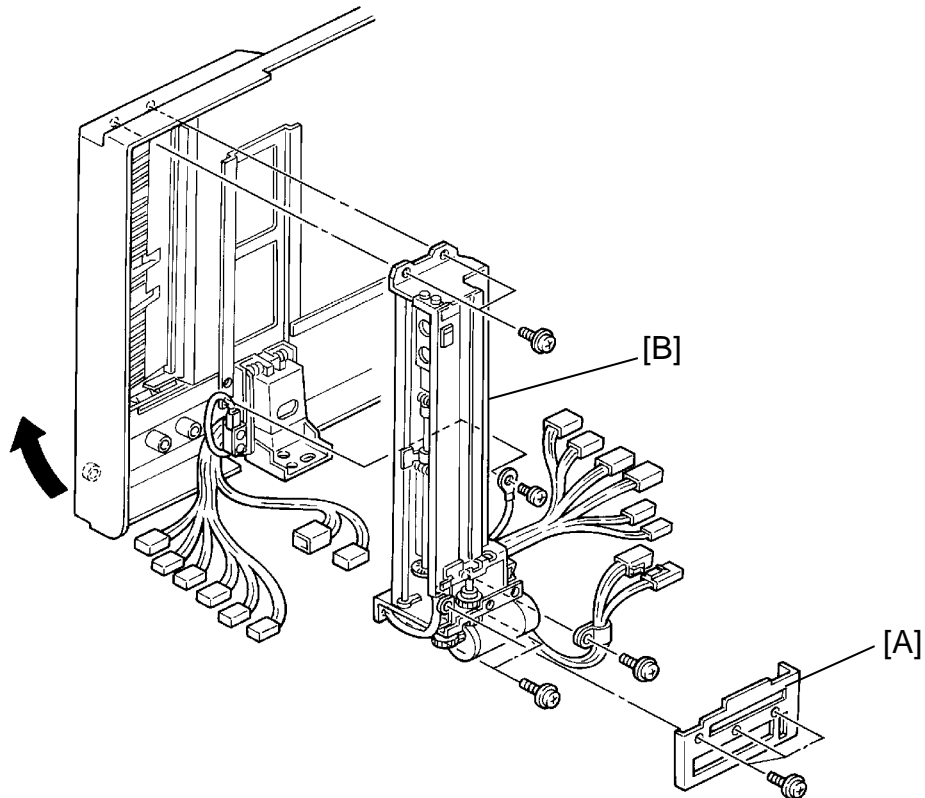
6.1 TRANSPORT BELT REMOVAL



1. Shut down the power, then remove the DF stopper [A] (2 screws) and stand the DF 90° on end.
2. Remove the inner cover [B] (2 screws), hinge [C] (1 stud screw and 3 screws), and switch cover [D] (1 screw and 1 connector)
3. Open the paper feed unit [E]. Then remove the transport belt unit [F] (5 screws).
4. Remove the 2 springs, then remove the transport belt. [G].

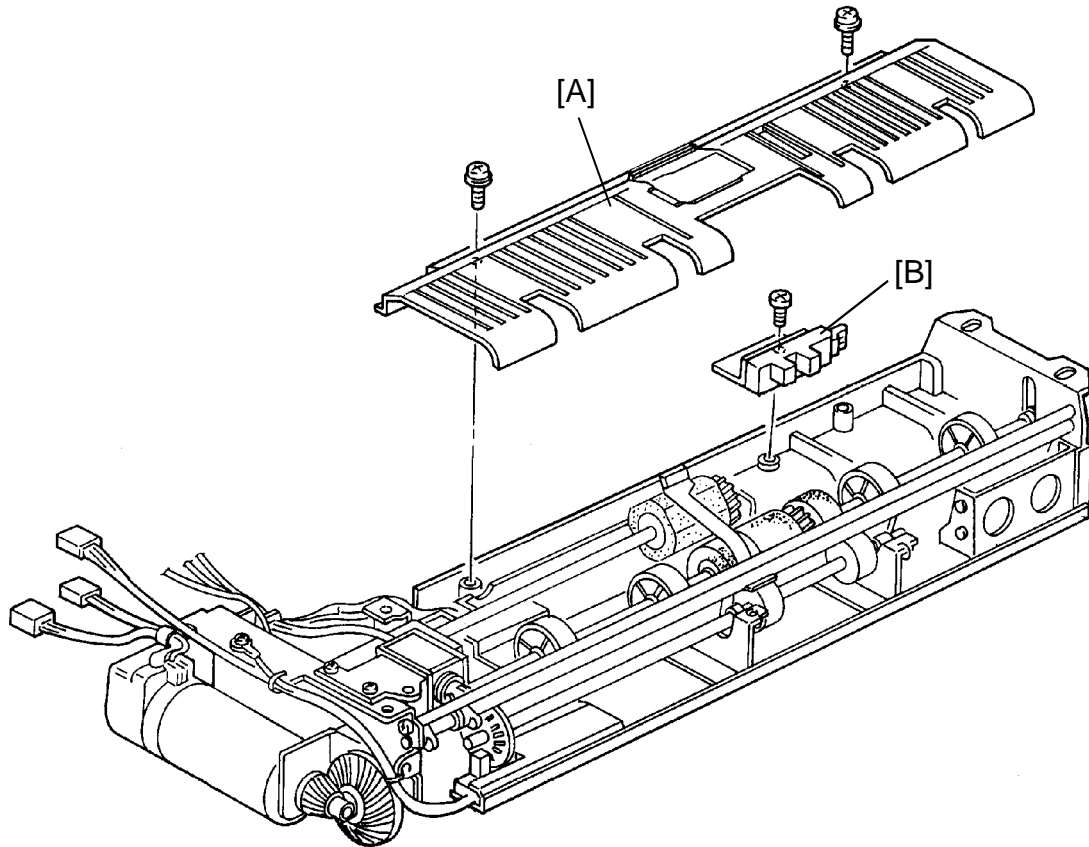
NOTE: The DF belt has to be installed in the notch [H] as shown.

6.2 FEED-IN UNIT REMOVAL



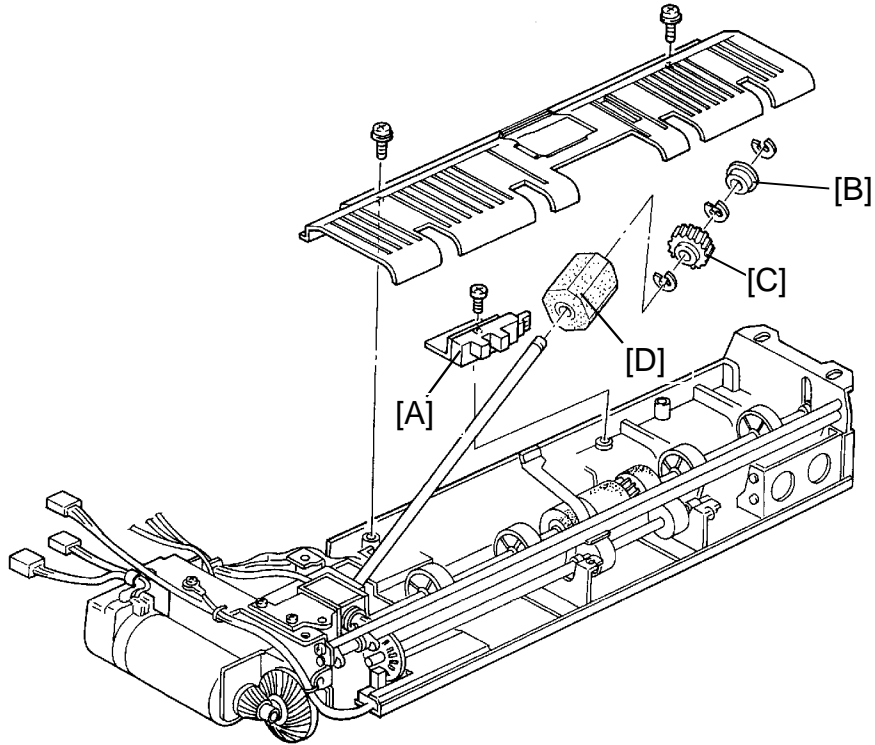
1. Remove the transfer belt unit. (See Transfer Belt Removal steps 1 - 3.)
2. Remove the motor cover [A] (3 screws).
3. Remove the paper feed unit [B] (6 screws and 8 connectors).

6.3 DOCUMENT SET SENSOR REPLACEMENT



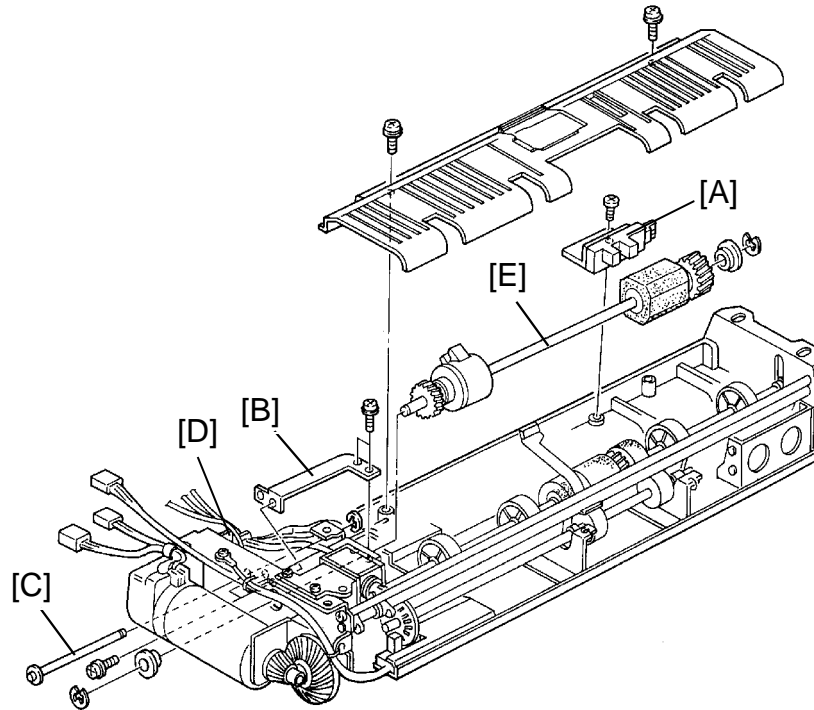
1. Remove the paper feed unit. (See Paper Feed unit Removal).
2. Remove the paper feed guide [A] (2 screws).
3. Remove the document set sensor assembly [B] (1 screw and 1 connector), then remove the sensor (1 screw).

6.4 PICK UP ROLLER REPLACEMENT



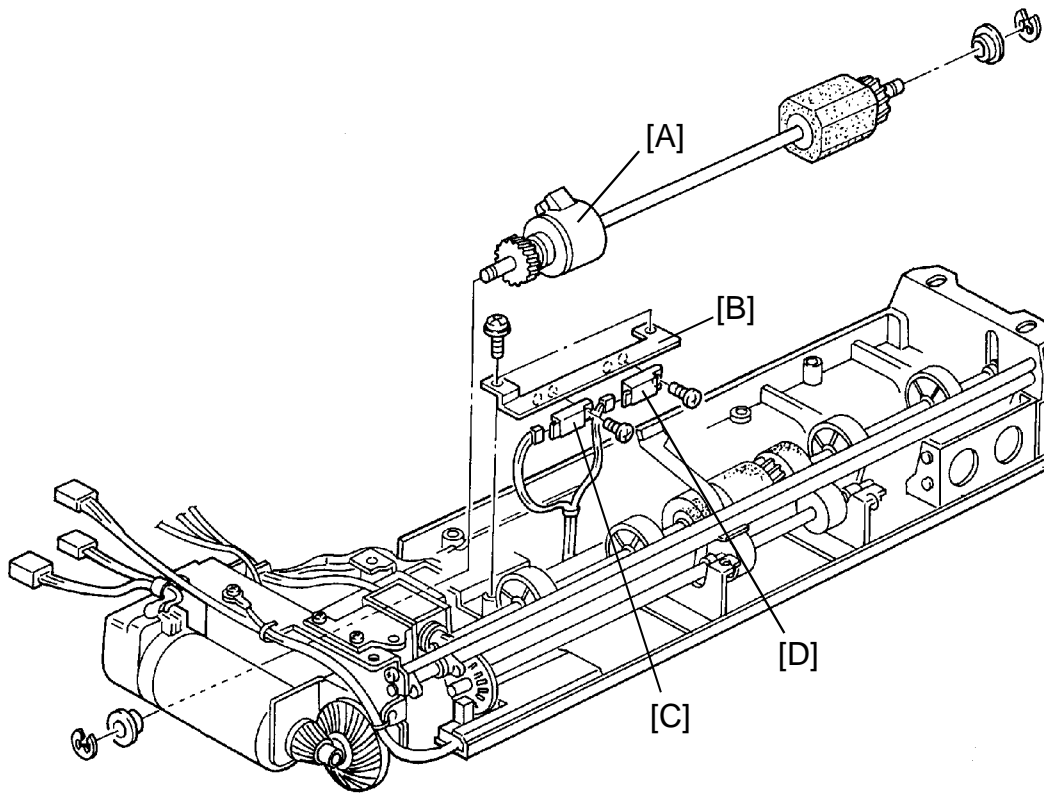
1. Remove the document set sensor assembly [A] (Refer to the Document Set Sensor Replacement).
2. Remove the bushing [B] (1 E-ring), and a gear [C] (1 E-ring), then remove the pick-up roller [D] (1 E-ring).

6.5 FEED-IN CLUTCH REPLACEMENT



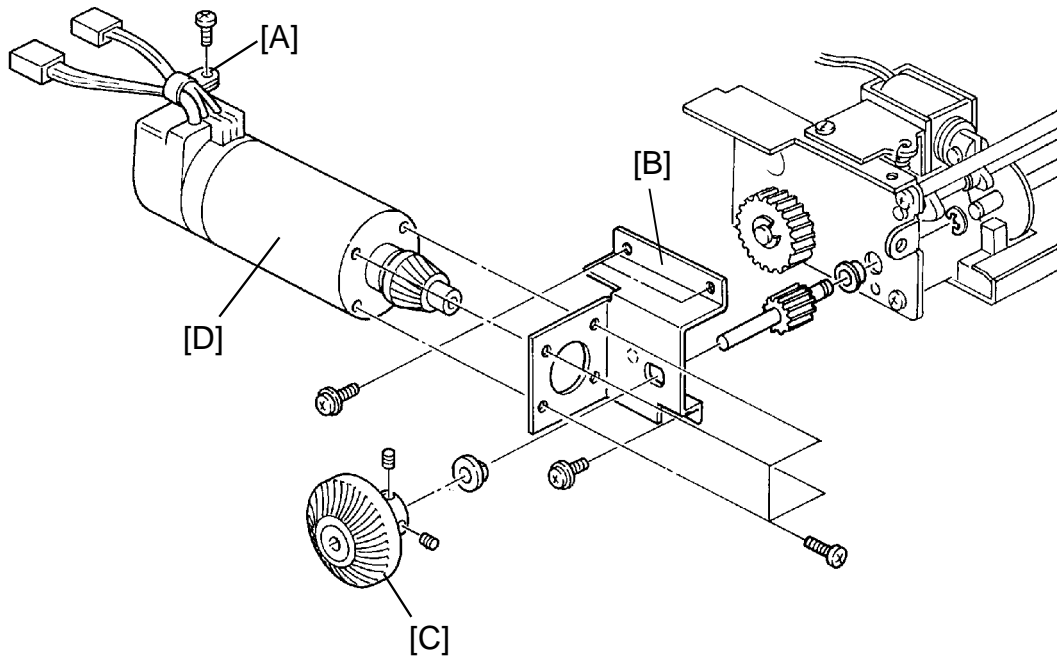
1. Remove the document set sensor assembly [A]. (Refer to the Document Set Sensor Replacement.)
2. Remove the reinforcement bracket [B] (4 screws).
3. Remove the paper feed clutch stopper [C] (1 E-ring).
4. Open the harness clamp [D], then remove the paper feed clutch axis [E] (2 E-rings and 2 bushings).

6.6 REGISTRATION SENSOR AND SIZE SENSOR REPLACEMENT



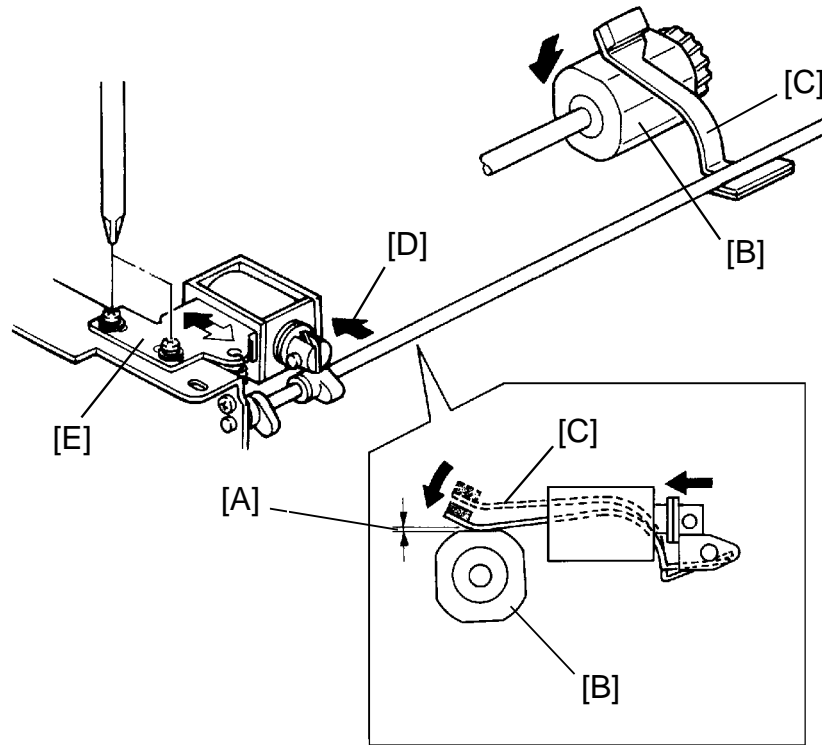
1. Remove the paper feed clutch [A]. (Refer to the Paper Feed Clutch Replacement).
2. Remove the registration sensor and size sensor assembly [B] (2 screws, 2 connectors).
3. Remove the registration sensor [C] (1 screw), and the size sensor [D] (1 screw).

6.7 BELT DRIVE MOTOR REPLACEMENT



1. Remove the paper feed unit. (See Paper Feed Unit Removal.)
2. Remove the plastic clamp [A] (1 screw) and disconnect the 2P and the 4P connector .
3. Remove the motor assembly [B] (3 screws and 1 E-ring).
4. Remove the gear [C] (2 Allen screws), then remove the motor [D] (4 screws).

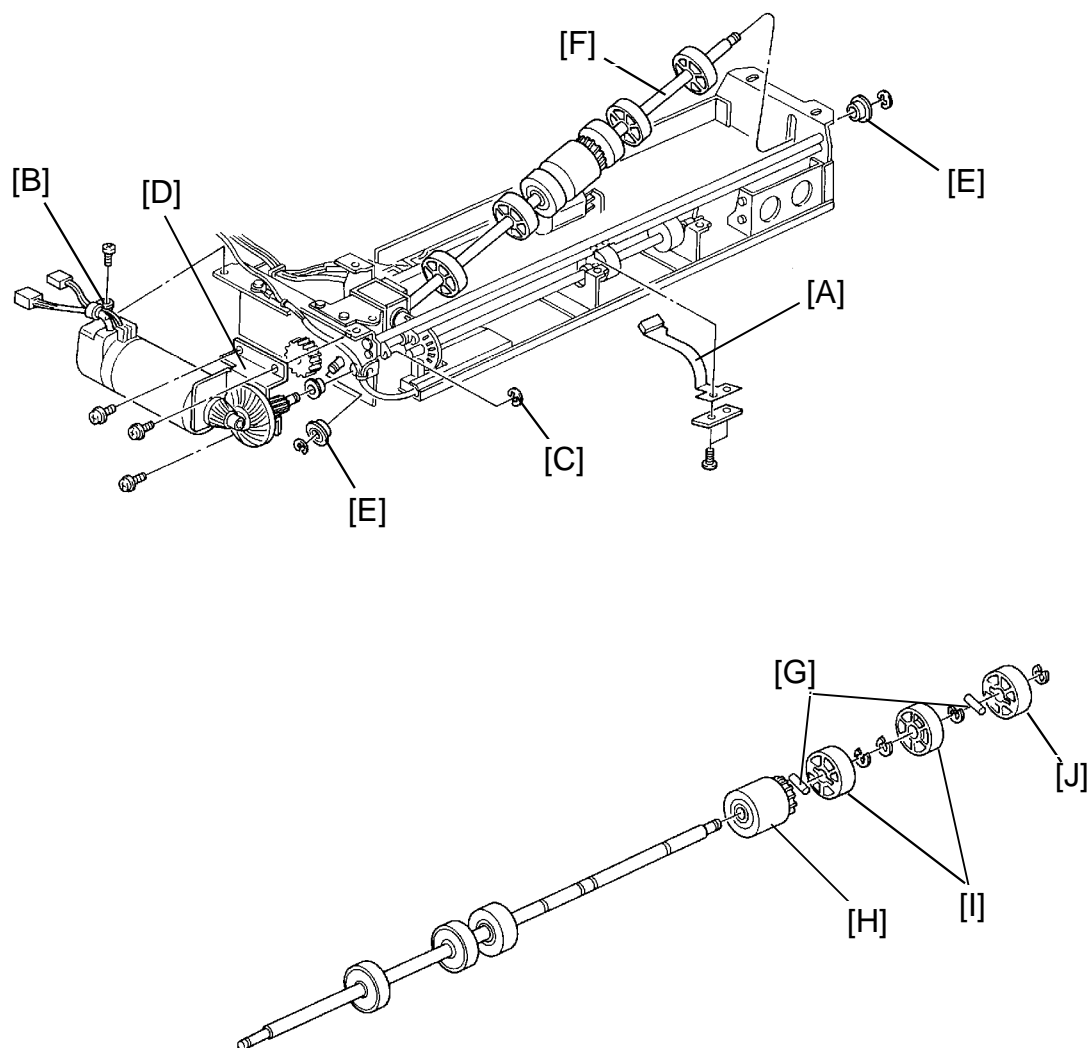
6.8 PICK-UP SOLENOID GAP ADJUSTMENT



Adjustment Standard: 0.1~0.6 mm

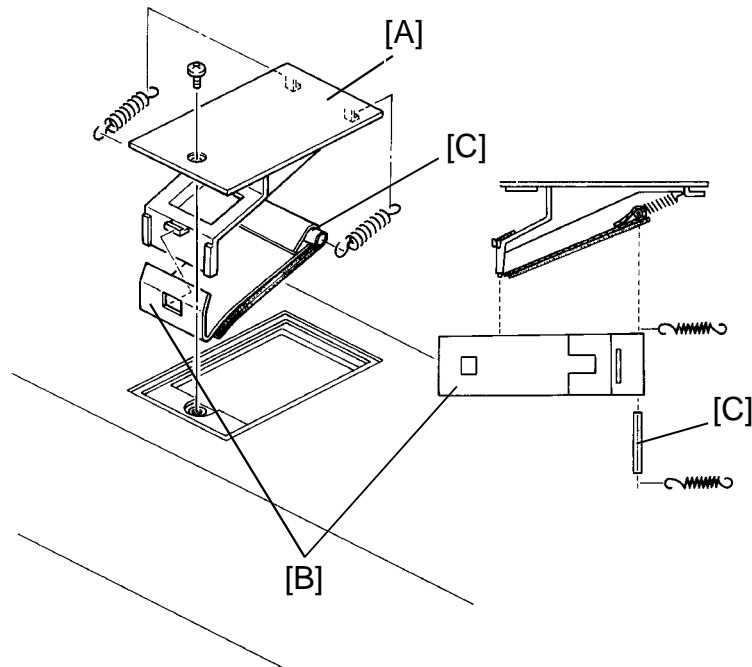
1. Measure the gap [A] between the pick-up roller [B] and pick-up lever [C] while pushing the solenoid bar [D].
2. If the gap is not within specifications (0.1 to 0.6 mm), perform the following step.
3. While pushing the solenoid bar [D], loosen the pick-up solenoid bracket (2 screws) [E] and secure them so that the gap [A] is within specifications.

6.9 ORIGINAL FEED ROLLER REPLACEMENT



1. Remove the paper feed unit. (See Paper Feed Unit Removal.)
2. Remove the pick-up lever [A] (2 screws and 1 bracket), plastic clamp [B] (1 screw) and a E-ring [C]. Then remove the paper feed motor assembly [D] (3 screws).
3. Remove 2 sets of E-rings and bearings [E]. Then remove the roller shaft [F].
NOTE: Be careful not to loose pins [G].
4. Remove the feed rollers [H] (2 pull-out rollers [I], 1 side-roller [J], and 4 E- rings).

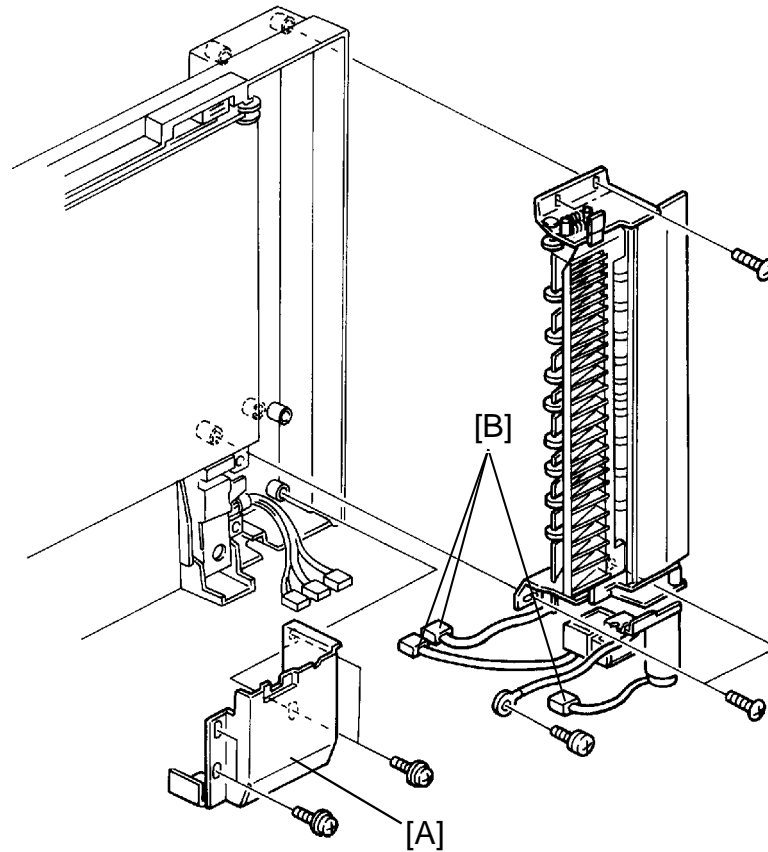
6.10 FRICTION BELT REPLACEMENT



1. Remove the friction belt assembly [A] (1 screw).
2. Remove the friction belt [B] (2 springs and 1 pin [C]).

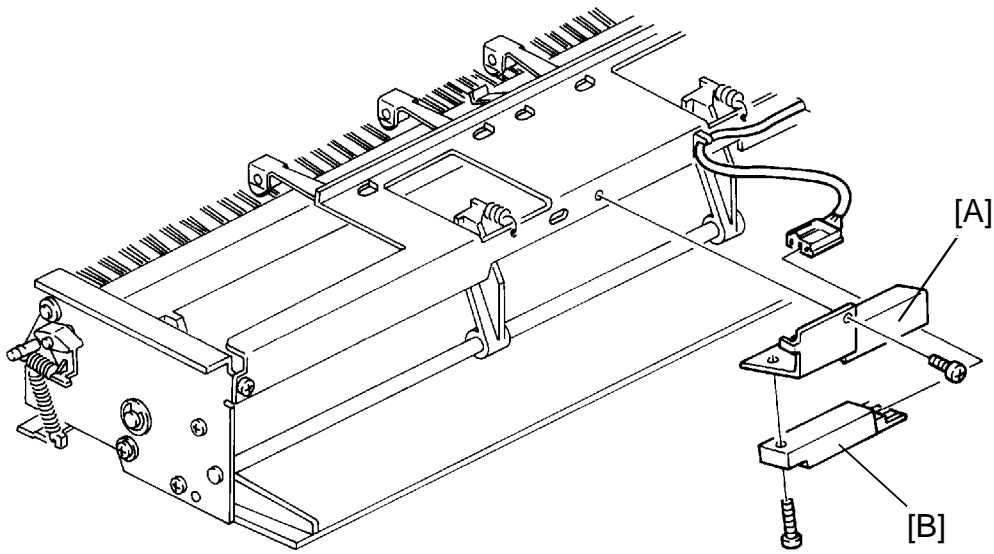
NOTE: Do not touch the friction belt surface.

6.11 FEED-OUT UNIT REMOVAL



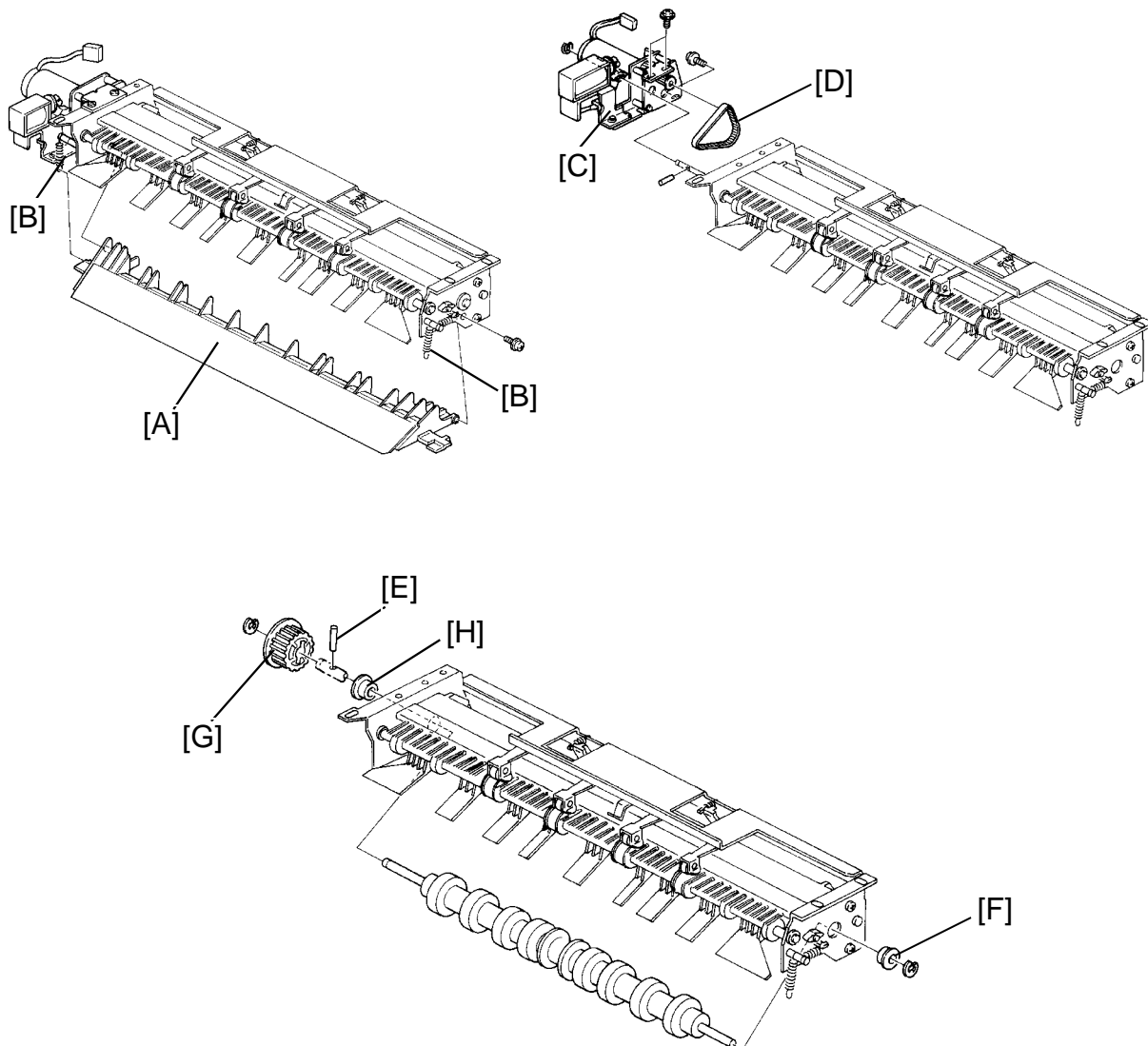
1. Remove the motor cover [A] (4 screws).
2. Disconnect the 3 connectors [B].
3. Remove the feed-out unit (5 screws).

6.12 FEED-OUT SENSOR REPLACEMENT



1. Remove the feed-out unit. (Refer to Feed-Out Unit Removal.)
2. Remove the feed-out sensor assembly [A] (1 screw and 1 connector).
3. Replace the feed-out sensor [B] (1 screw).

6.13 INVERTER ROLLER REPLACEMENT

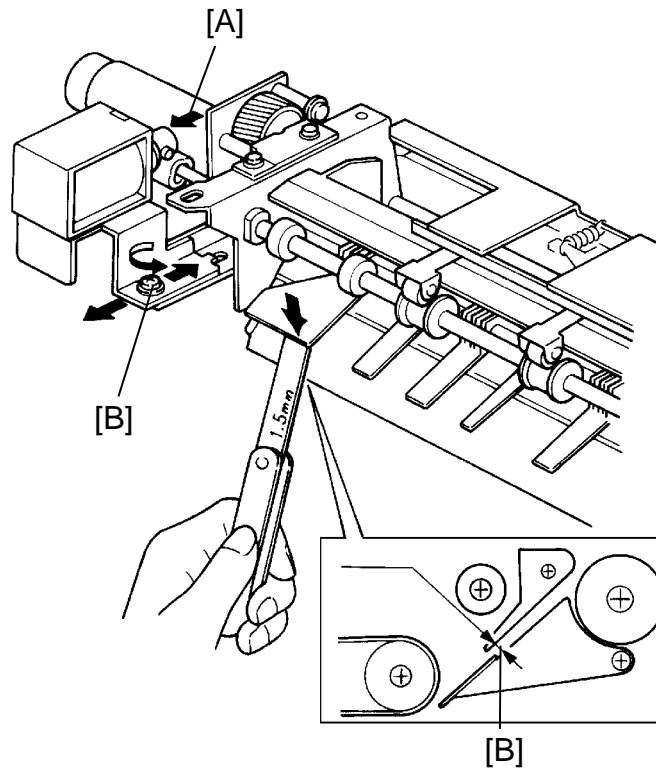


1. Remove the paper feed-out unit. (Refer to Feed-Out Unit removal.)
2. Remove the inverter guide plate [A] (1 screw and 2 springs [B]).
3. Remove the inverter motor assembly [C] (3 screws and 1 E-ring) and the timing belt [D].

NOTE: Be careful not to lose pin [E].

4. Remove the bushing [F] (1 E-ring), inverter roller sprocket [G] (1 E-ring), and bushing [H].
5. Replace the inverter roller and the inverter roller shaft.

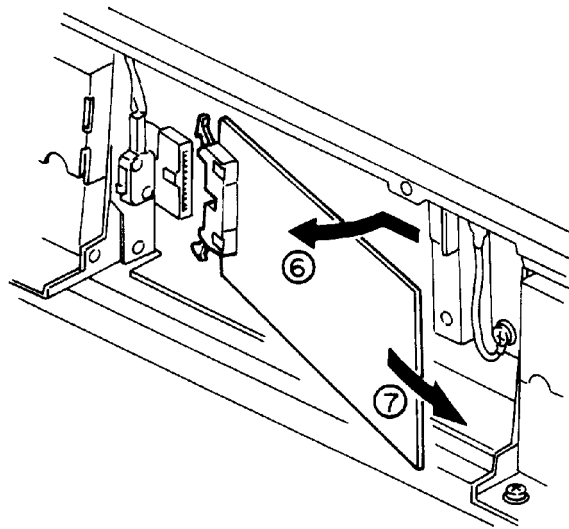
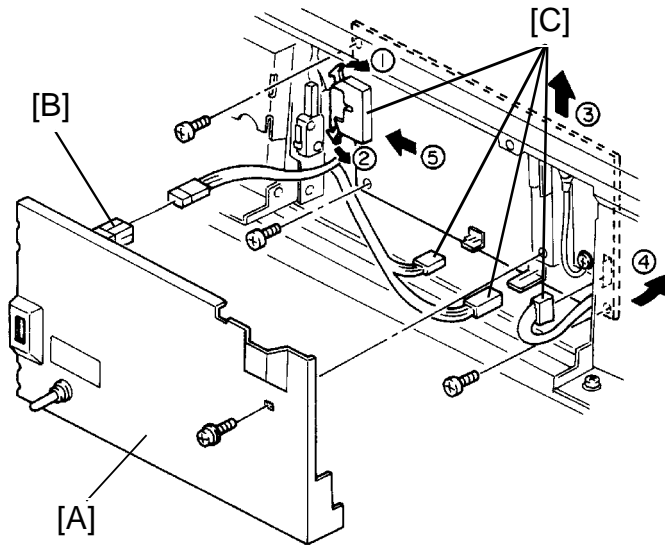
6.14 INVERTER SOLENOID ADJUSTMENT



Adjustment Standard: 1.5 ± 0.5 mm

1. Remove the feed-out unit. (Refer to Feed-Out Unit Removal.)
2. Hold down the inverter solenoid bar [A] to measure the gap [B].
3. If the gap is not within specifications, take the following steps.
4. Loosen the solenoid bracket screw [B].
5. Adjust the gap by sliding the inverter solenoid assembly

6.15 MAIN PCB REPLACEMENT

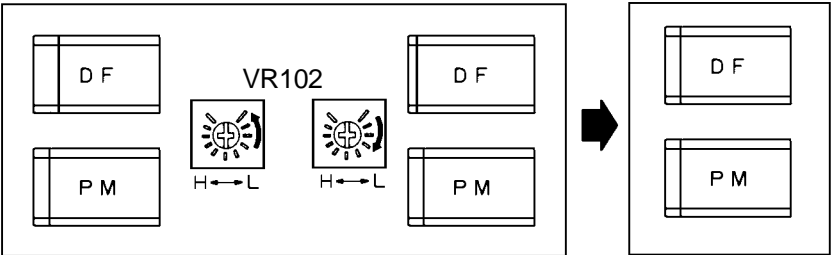
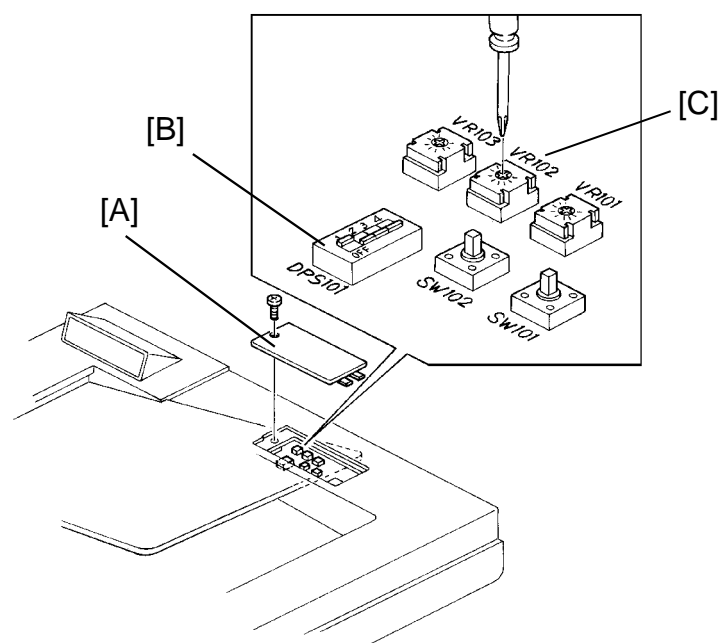


1. Remove the main PCB cover [A] (1 screw, 1 connector).
2. Remove 3 screws to disconnect the optic fiber cable connector [B].
3. Disconnect the connectors [C], then remove the PCB as shown.

NOTE: When removing the PCB, be careful not to damage any of the components that protrude from the board.

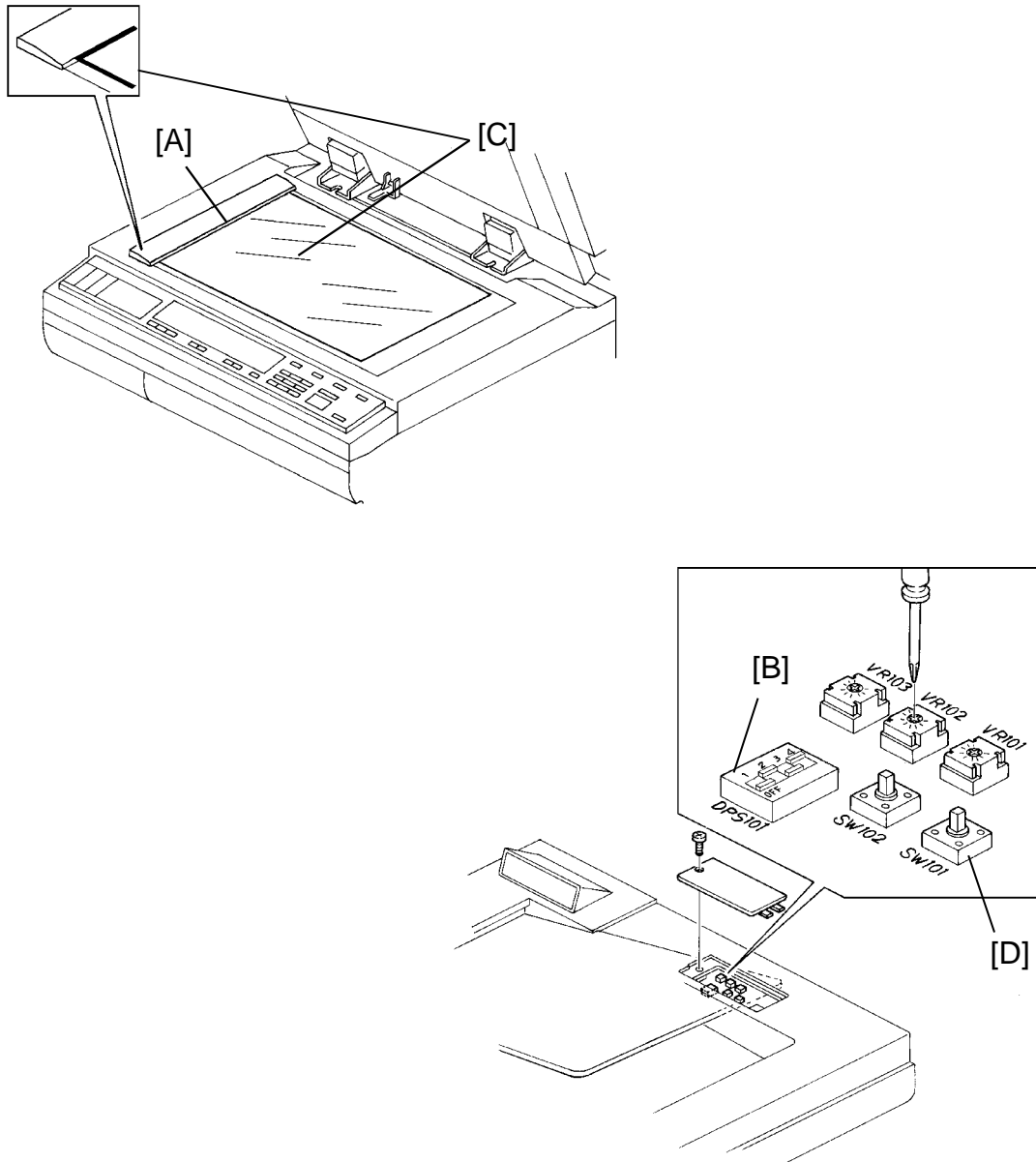
6.16 DF LEADING EDGE REGISTRATION ADJUSTMENT

6.16.1 One-sided Original Mode



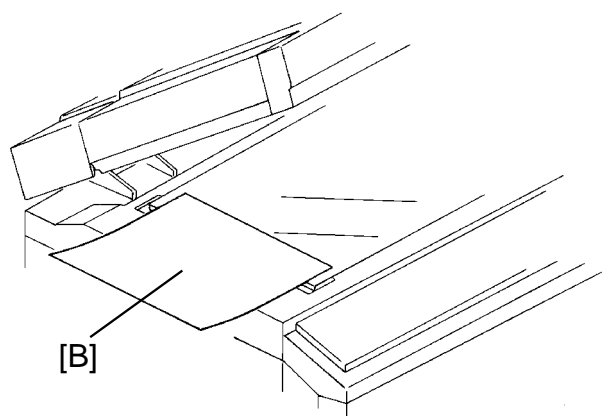
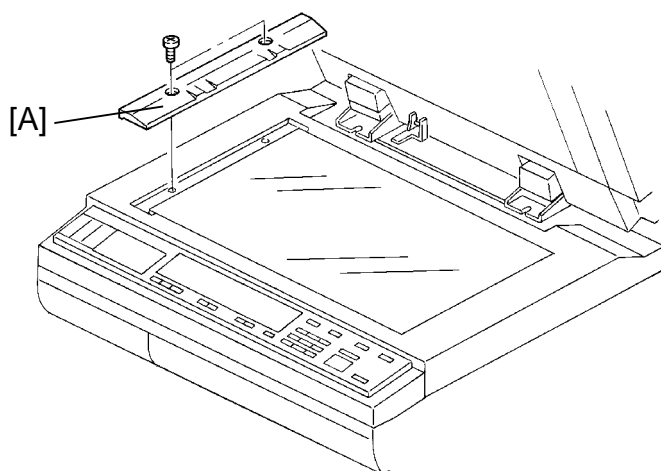
1. Remove the DF main control board cover [A] (1 screw), and confirm that the setting of DIP SW 101 [B] on the main control board is as follows:
ON: 101-1
OFF: 101-2,3,4
2. Make a copy of the test sheet in platen mode (A4 / 8 1/2" x 11" sideways).
3. Confirm that the original select switch is set to the thin original mode and make a copy in DF mode (A4 / 8 1/2" x 11" sideways).
4. Compare the registration of the copy in platen mode with that in the DF mode, and confirm that the difference is within 2.5 mm.
5. If the difference is more than 2.5 mm, adjust VR102 [C] to change the original-stop timing according to the above illustration.

6.16.2 Two-sided Original Mode

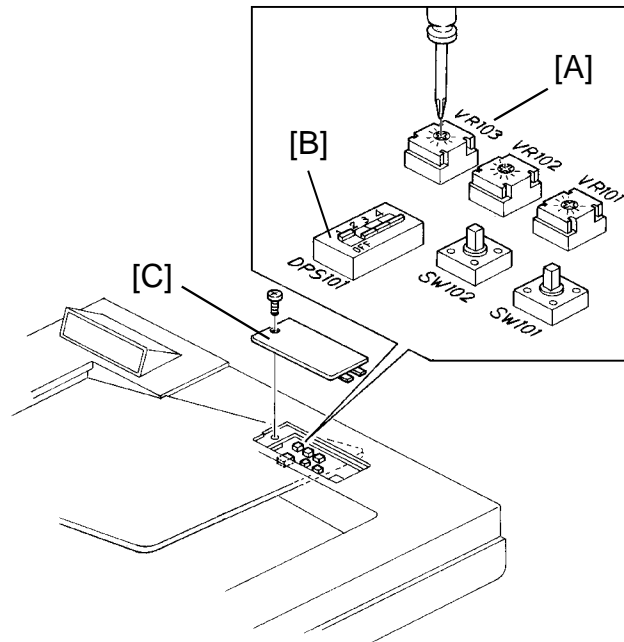
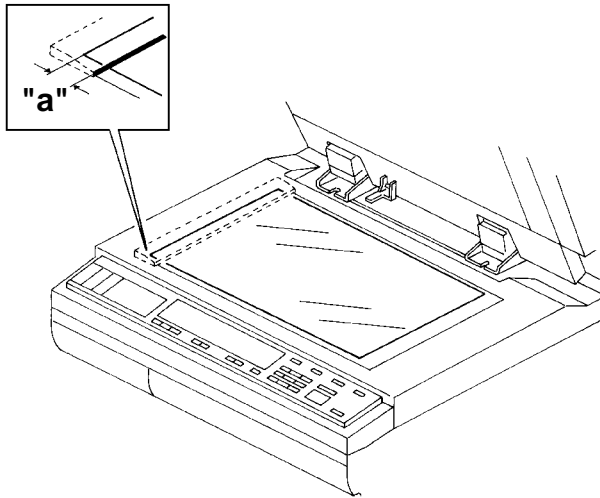


NOTE: a) An original should stop pressed against the left scale [A] in DF two-sided original mode.
b) The position of the original select switch does not matter.

1. Set DIP SW101 [B] on the main control board as follows:
ON: 101-2, 4
OFF: 101-1, 3
2. Set a sheet of A3/11" x 17" paper [C] on the DF then press SW 101 [D] to feed the paper into the DF belt section.
3. When the paper stops on the exposure glass after the inversion, open the DF slowly so that the paper does not move from the stop position.
4. Confirm that the paper has stopped against the left scale.



5. If the paper has not stopped against the left scale [A], remove the left scale (2 shoulder screws).
6. Set a sheet of A4 / 8 1/2" x 11" paper [B] sideways on the exposure glass edge as shown.
NOTE: This sheet of paper prevents the original from jamming at the edge of the exposure glass when it is fed in without the left scale.
7. Set a sheet of A3 / 11" x 17" paper on the DF then press SW101.
8. Just after the paper is fed in, gently pull off the sheet set in step 6.
9. When the paper (set in step 7) stops on the exposure glass after the inversion, open the DF slowly so that the paper does not move from the stop position.



VR 103

"a" ≤ 10~15 mm



"a" ≥ 10~15 mm

10. If the paper did not stop at the correct position ("a"=10~15 mm), turn VR 103 [A] to correct the original stop timing.

NOTE: Turning VR103 clockwise results in the original stopping later.

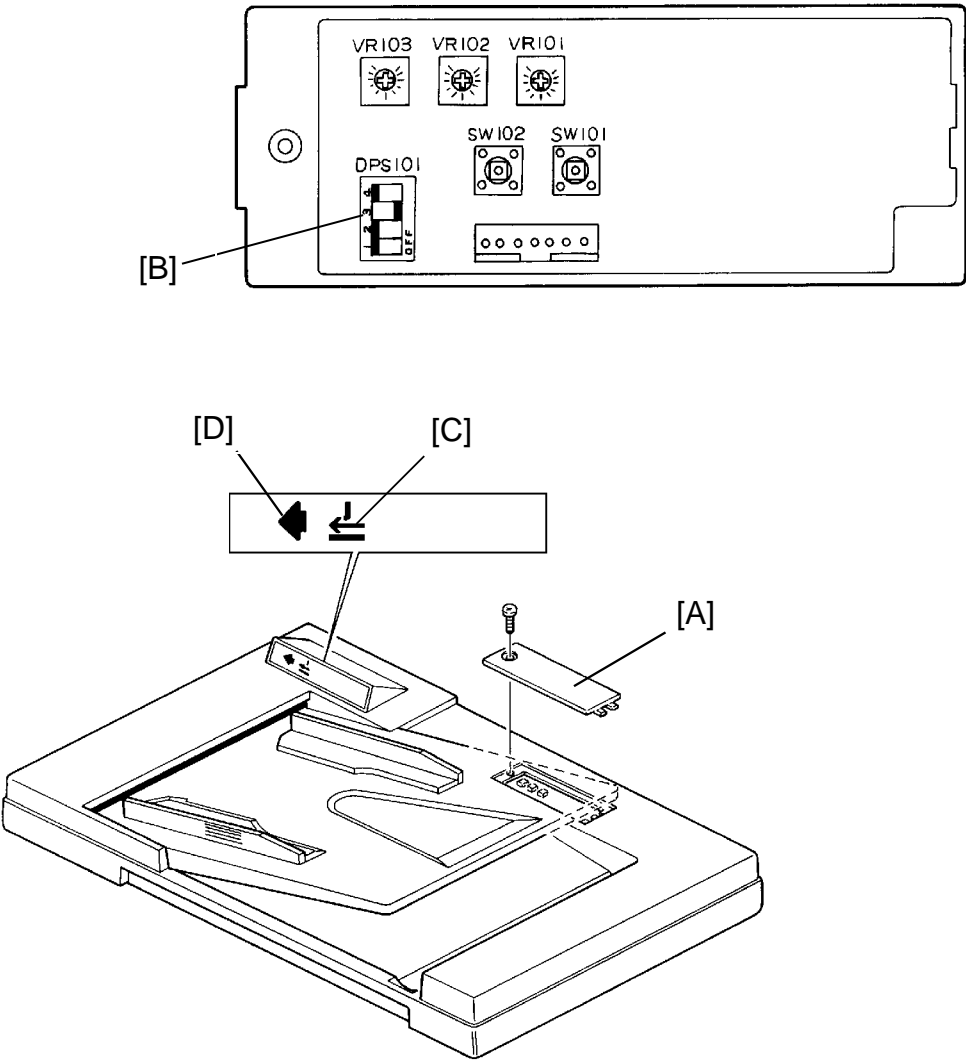
11. Set back DIP SW101 [B] on the main control board as follows:

ON: 101-1

OFF: 101-2,3,4

12. Reinstall the DF main control board cover [C] and the left scale.

6.17 PAPER FEED MOTOR SPEED CHECK AND ADJUSTMENT



1. Remove the DF main PCB cover [A] (1 screw).
2. Set DIP SW101 [B] NO. 1, 2, and 4 to ON. Leave DIP SW 3 in the OFF position. Then turn the main switch on.
3. If either the original set indicator [C] or the original feeding indicator [D] is on, adjust the speed by turning VR-101. If the original set indicator is on, turn VR-101 in the L direction. If the original feeding indicator is on, turn VR-101 in the H direction. Adjust until both indicators stay off for at least 5 seconds.

SECTION 9

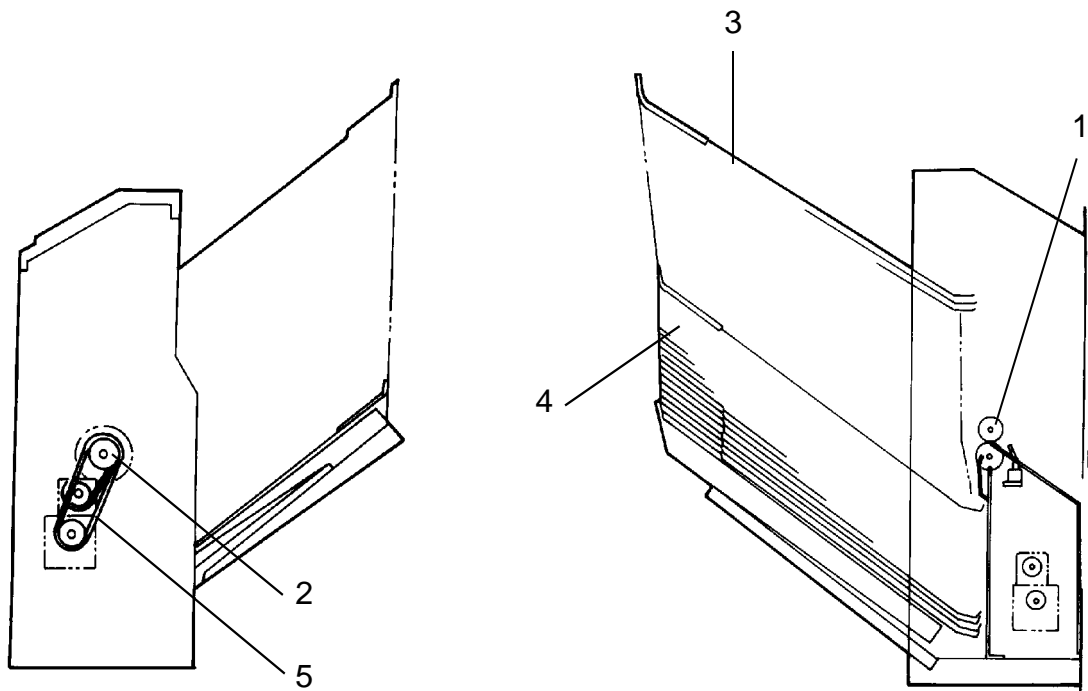
SORTER

(CS2090)

1. SPECIFICATIONS

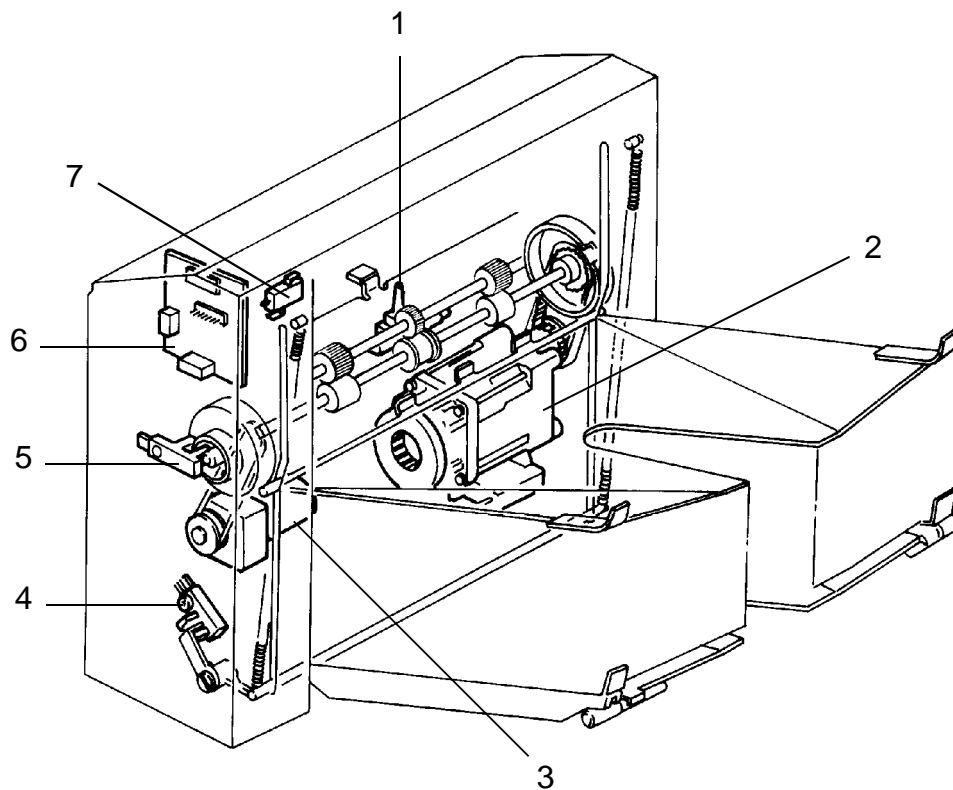
Paper Size for Bins:	Maximum 11" x 17"
	Minimum 5½" x 8½"
Paper Weight:	14 to 24 lb
Number of Bins:	20 bins + proof tray
Bin Capacity:	Sort Mode: 30 sheets/ 8½" x 11"
	15 sheets/ 8½" x 14"
	10 sheets/11" x 17"
	Stack Mode 30 sheets/ 8½" x 11"
	10 sheets/ 8½" x 14"
	10 sheets/ 11" x 17"
Proof Tray Capacity:	100 sheets (all sizes)
Power Source:	100 V, 50/60 Hz, 0.6 A (from copier)
Power Consumption:	60 W
Dimensions:	13.6" x 18.7" x 13.3"
(W x D x H)	
Weight:	28.3 lb

2. MECHANICAL COMPONENT LAYOUT



1. Exit Rollers
2. Bin Drive Wheel
3. Proof Tray
4. Bins
5. Roller Drive Belt

3. ELECTRICAL COMPONENT LAYOUT



1. Paper Sensor (S1)
2. Wheel Drive Motor (M1)
3. Roller Drive Motor (M2)
4. Bin Home Position Sensor (S2)
5. Wheel Sensor (S3)
6. Sorter Board (PCB1)
7. Cover Safety Switch (SW1)

4. ELECTRICAL COMPONENT DESCRIPTIONS

Index No.	Name	Function	Symbol
Motors			
2	Wheel Drive Motor	Drives the wheel that changes the bin positions	M1
3	Roller Drive Motor	Drives all rollers in the sorter paper path	M2
Sensors			+
1	Paper Sensor	Misfeed detection for the sorter	S1
4	Bin Home Position Sensor	Detects when all bins are in the down position (home)	S2
5	Wheel Sensor	Detects each 1/2 turn of the wheel (1 bin changed for each 1/2 turn)	S3
Switch			
7	Cover Safety Switch	Detects when sorter cover is opened	SW1
Printed Circuit Board			
6	Sorter Board	Controls all sorter functions. Communicates with I/O control PCB through the interface PCB	PCB1

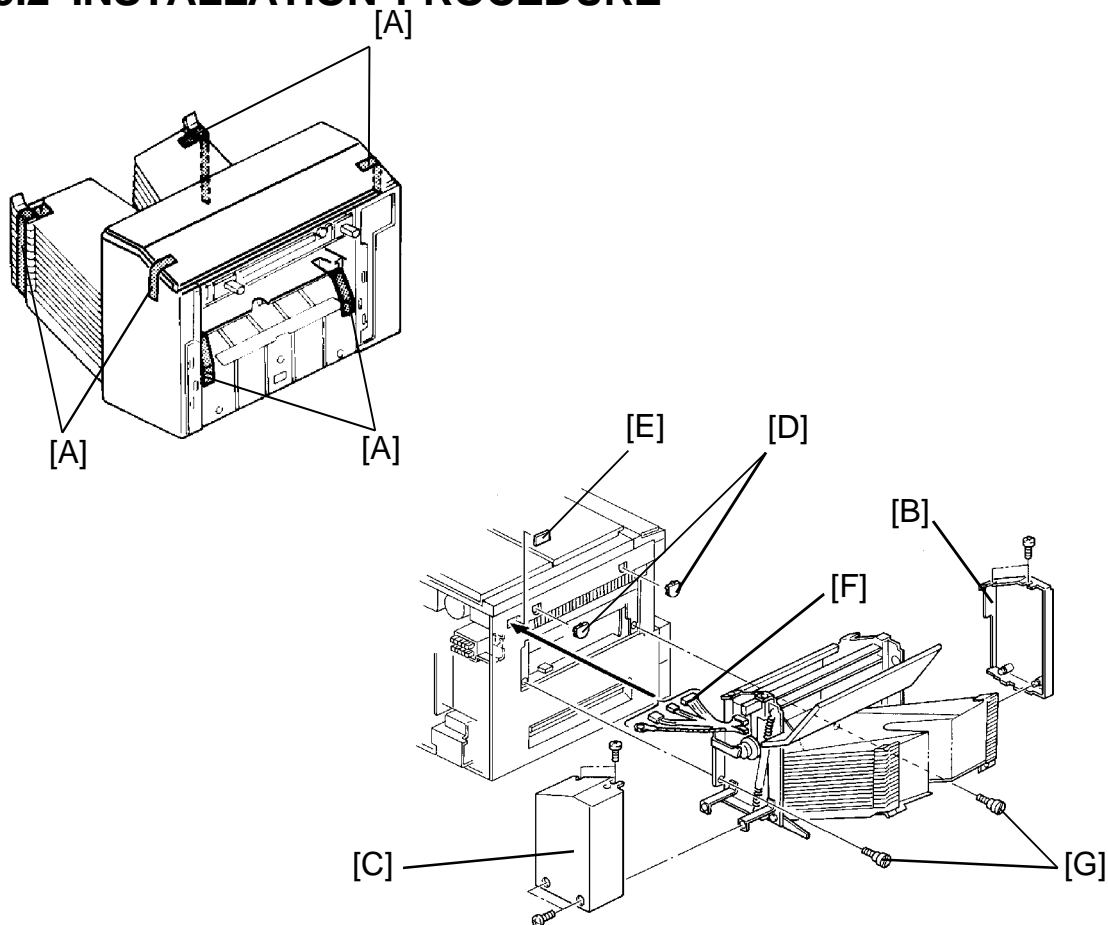
5. INSTALLATION

5.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

- 1. Installation Procedure.....1
- 2. New Equipment Condition Report
 (--17, --27 machines only)1
- 3. Envelope for NECR
 (--17 machine only)1
- 4. Thumb Screw1
- 5. Grounding Screw.....1
- 6. Star Washer.....1
- 7. Multilingual Decal
 (--25, --26, --27 machines only)1

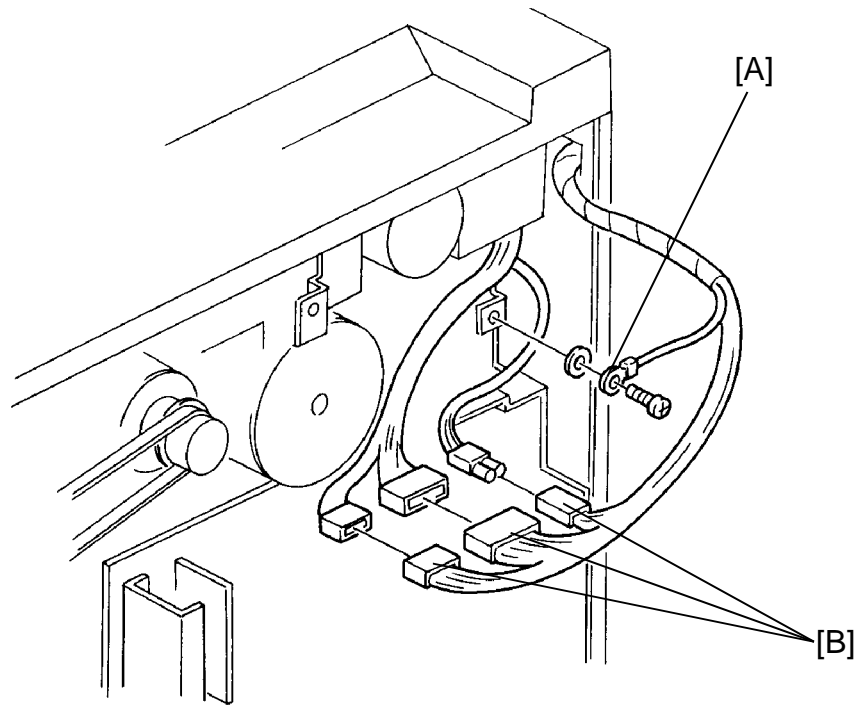
5.2 INSTALLATION PROCEDURE



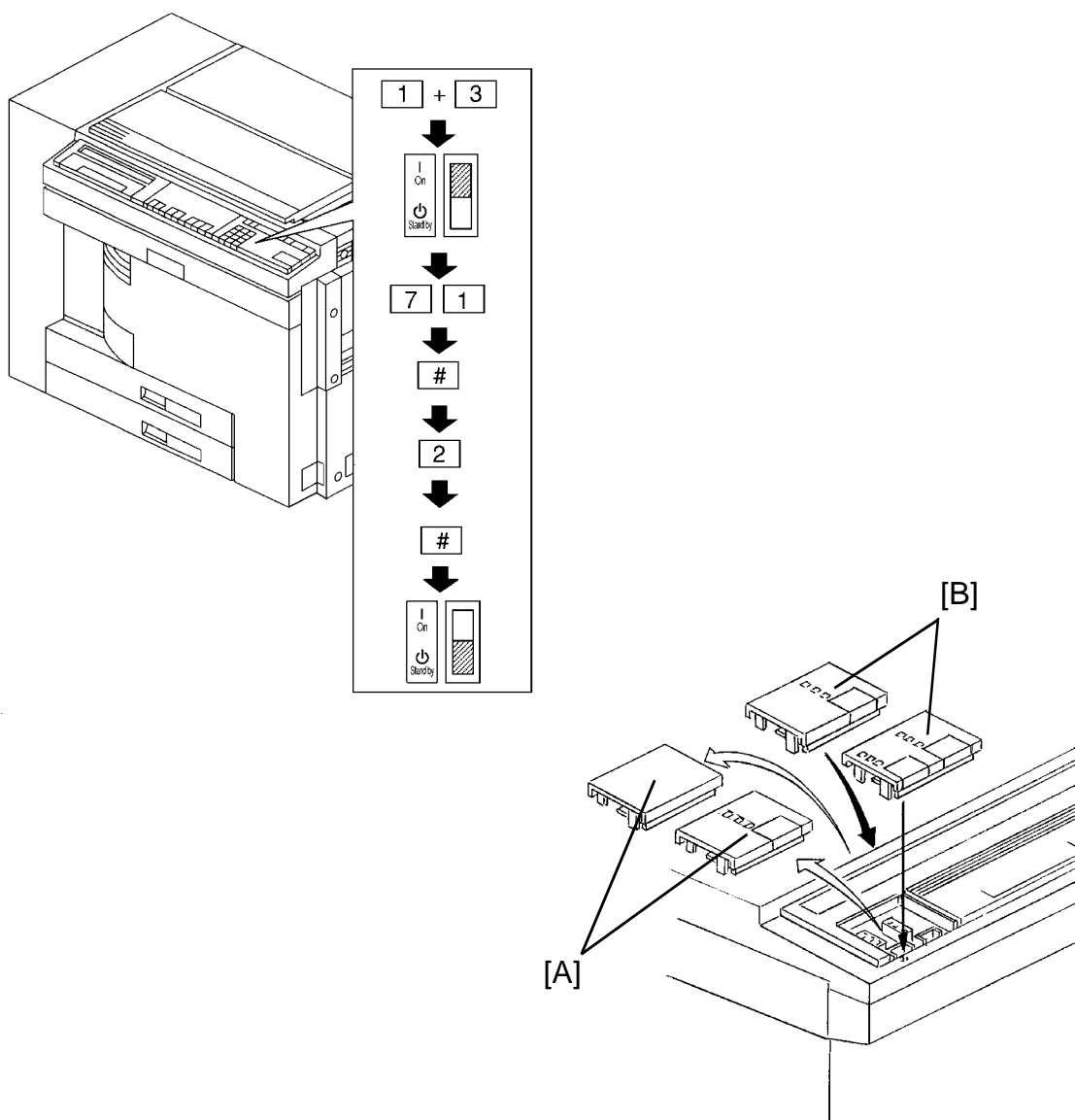
CAUTION: Unplug the copier power cord before starting the following procedure.

NOTE: • The sorter adapter (A328) should be installed before the sorter is installed.

1. Remove the strips of tape [A].
2. Remove the front sorter cover [B] (2 screws) and rear sorter cover [C] (4 screws).
3. Remove the cover plates [D] with cutting pliers and the plastic cap [E].
4. Mount the sorter on the copier. Insert the two mounting studs into the docking holes, and pass the harness [F] through the access hole.
5. Attach the sorter unit to the copier with the two thumb screws [G].



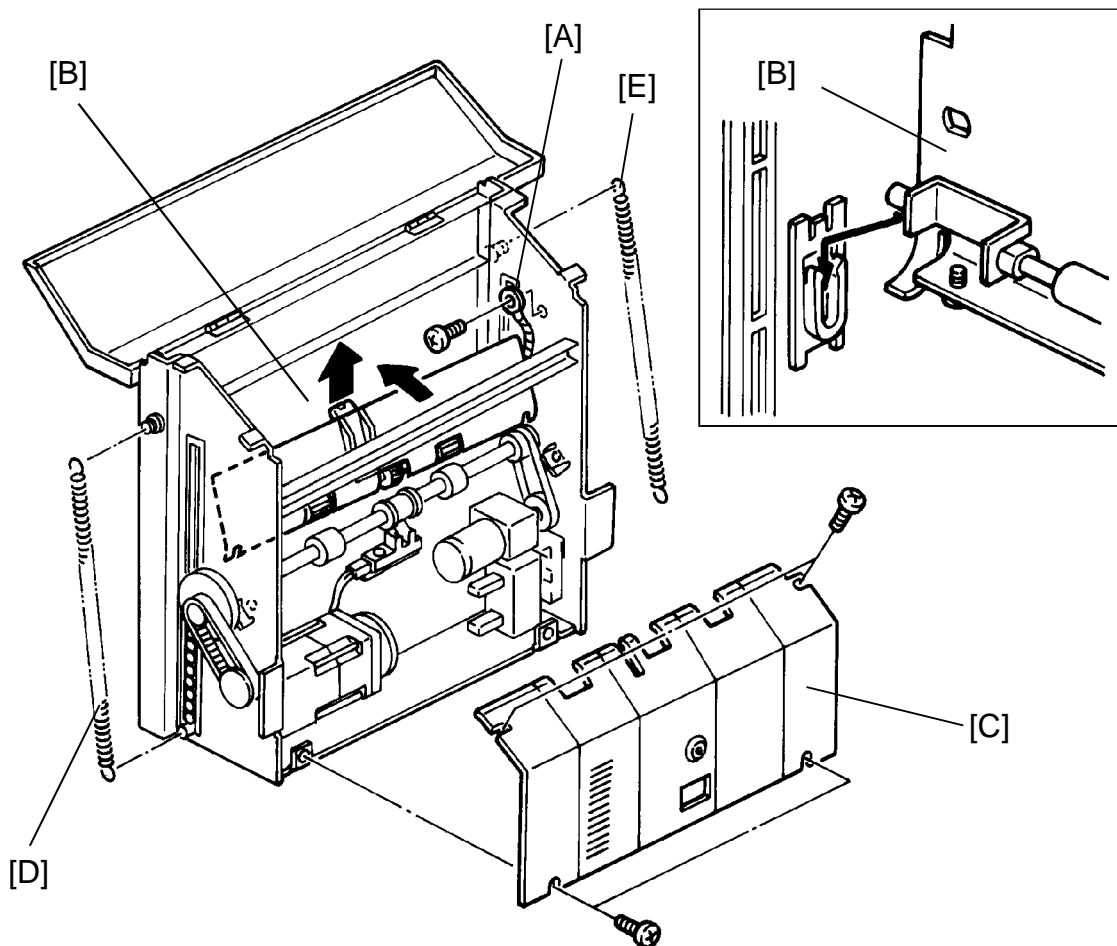
6. Secure the sorter protective earth wire [A] (1 screw and toothed washer).
7. Connect the three connectors [B] as follows:
 - 2P red to 2P red free
 - 4P white to 4P white free
 - 11P white to 11P white free



8. Reinstall all the covers.
9. Plug in the copier power cord.
10. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the call service indicator and the copy counter number "0" are blinking.
11. Enter 71 using the number keys and then press the enter key.
12. Enter 2 using the number keys and then press the enter key.
13. Turn off the main switch.
14. Remove the left plastic cover [A] on the operation panel and install the sorter key top and cover [B] instead.
NOTE: The sorter key top and cover are provided as an accessory for the copier.
15. Turn on the main switch and check the sorter's operation.

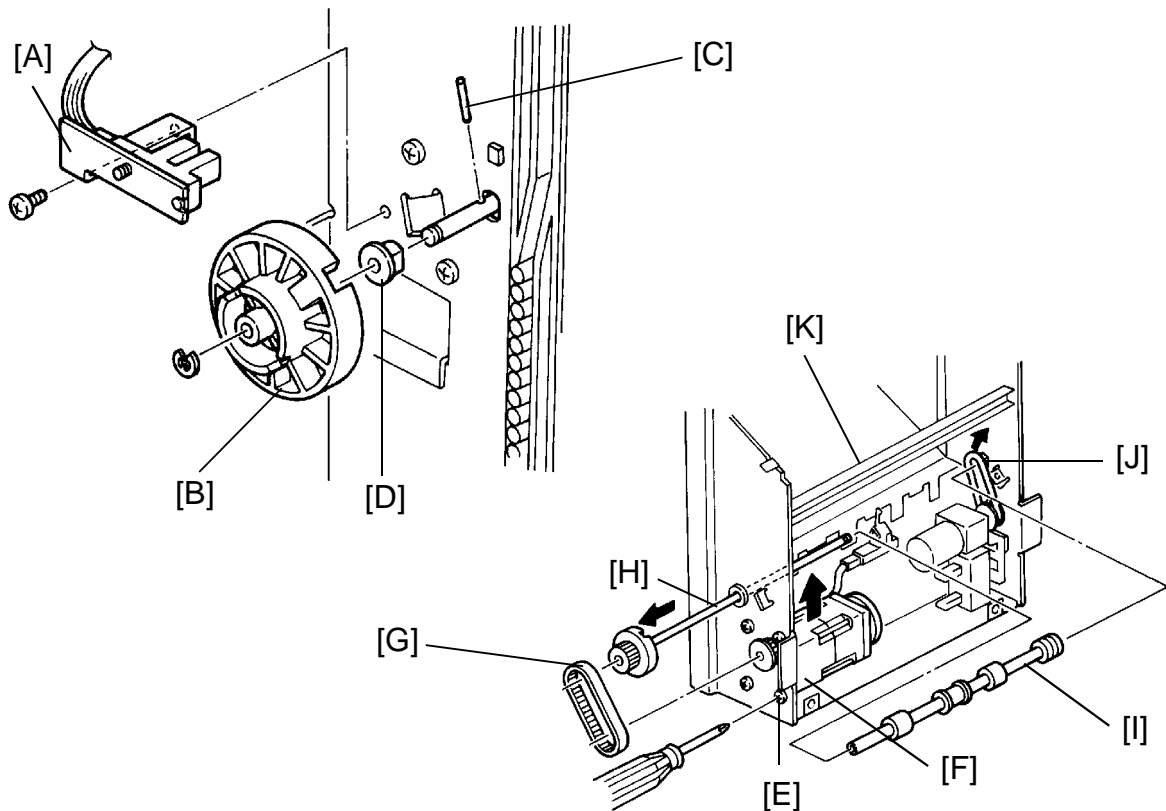
6. REPLACEMENT AND ADJUSTMENT

6.1 EXIT ROLLER AND O-RING REPLACEMENT



1. Remove the sorter from the copier.
2. Remove the front and rear covers (2 screws each).
3. Remove the ground wire [A] of the upper guide plate [B] (1 screw).
4. Swing the guide plate up, then remove it by carefully pulling it up.
5. Remove the inner cover [C] (4 screws).
6. Unhook the front [D] and rear [E] pressure springs.

CAUTION: Do not damage the paper sensor [K] when removing the exit roller.



7. Remove the wheel sensor assembly [A] (1 screw).

8. Remove the rear transfer wheel [B] (1 E-ring).

NOTE: Be sure not to lose the pin [C] for the wheel.

9. Remove the pin and bushing [D].

10. Loosen the four mounting screws [E] of the wheel drive motor [F].

11. Lift the wheel drive motor and slip off the timing belt [G].

12. Slide off the wheel drive shaft [H] and remove the exit roller [I] and O-ring [J].

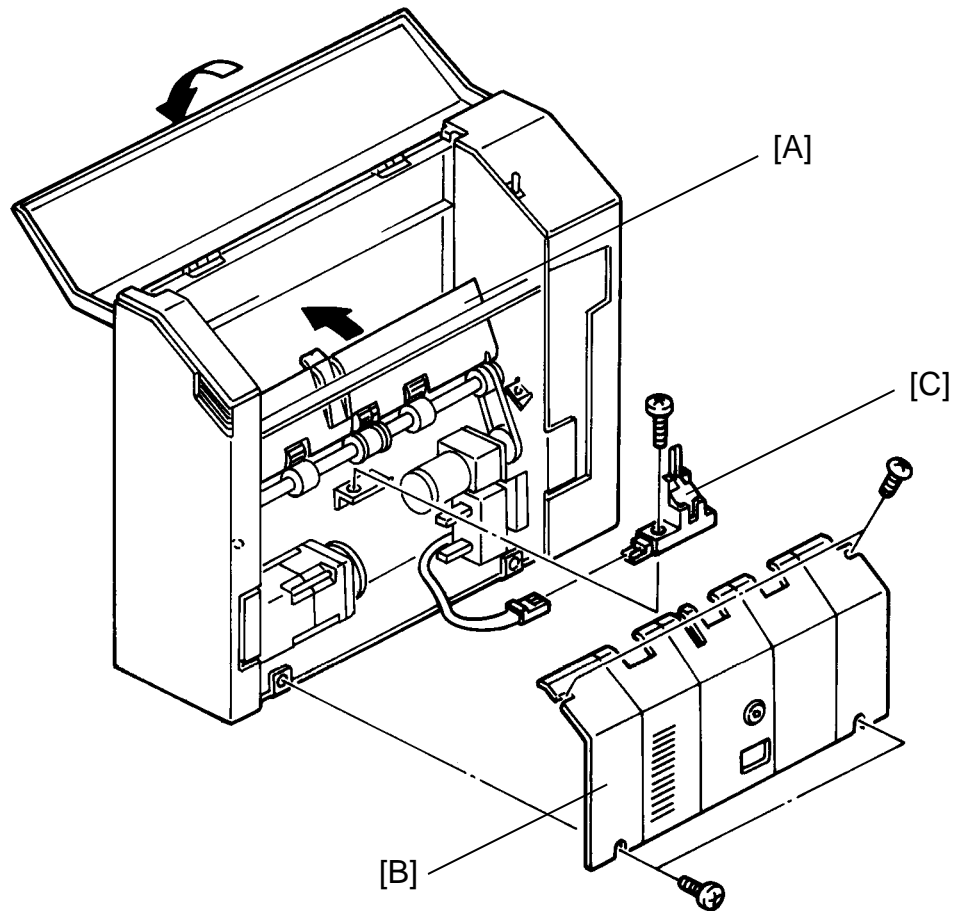
13. Replace the exit roller and O-ring, then reassemble.

NOTE: a) When reinstalling the wheel sensor assembly, be sure that the sensor does not touch the wheel.

b) When remounting the wheel drive motor, adjust the timing belt tension. (See Timing Belt Tension Adjustment.)

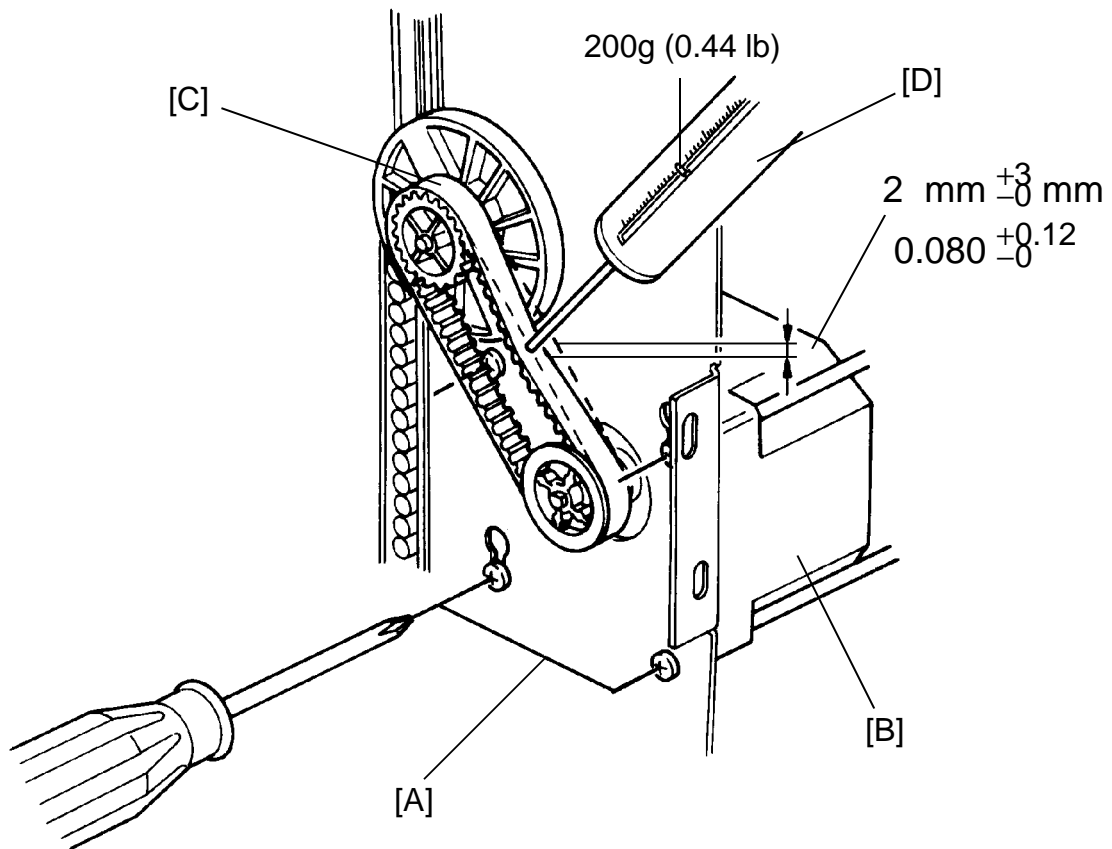
6.2 PAPER SENSOR REPLACEMENT

CAUTION: To avoid damaging the sensor, do not over-tighten the sensor mounting screw.



1. Remove the sorter from the copier.
2. Swing up the guide plate [A].
3. Remove the inner cover [B] (4 screws).
4. Replace the paper sensor [C] (1 screw and 1 connector) and reassemble.

6.3 TIMING BELT TENSION ADJUSTMENT



ADJUSTMENT STANDARD: $2 \text{ mm } +3 \text{ mm } -0 \text{ mm}$; $0.080 +0.12 -0$ inches
(deflection at 200 g (0.44 lb) pressure)

1. Remove the front cover.
2. Loosen the four mounting screws [A] of the wheel drive motor [B].
3. Press the timing belt [C] with a tension gauge [D] as shown in the figure and adjust the tension by repositioning the wheel drive motor.

SECTION 10

SORTER STAPLER

(ST22)

1. SPECIFICATIONS

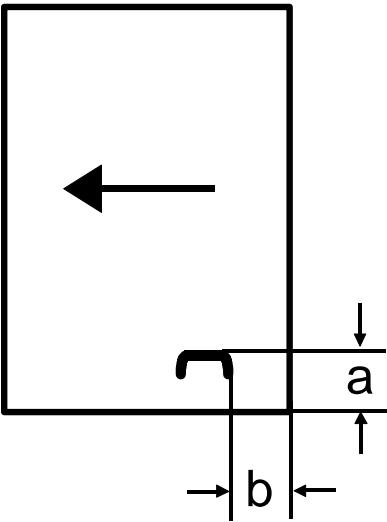
Configuration:	Console
Number of Bins:	20 + Proof Tray
Paper for Proof Tray:	Size: Maximum: 11" x 17" Minimum: 5 1/2" x 8 1/2" Weight: 14~41lb
Paper for Bins:	Sort/Stack mode Size: Maximum: 11" x 17" Minimum: 5 1/2" x 8 1/2" lengthwise Weight: 14~24 lb Staple mode Size: Maximum: 11" x 17" Minimum: 8 1/2" x 11" Weight: 17~20 lb
Paper Capacity:	Proof tray: 150 sheets 20 lb Bins:

	1 sided copies	2 sided copies
Sort mode	50 Sheets	50 Sheets
Stack mode	40 Sheets	35 Sheets

Staple Capacity: From 2 to 30 sheets 20lb

Staple Position:

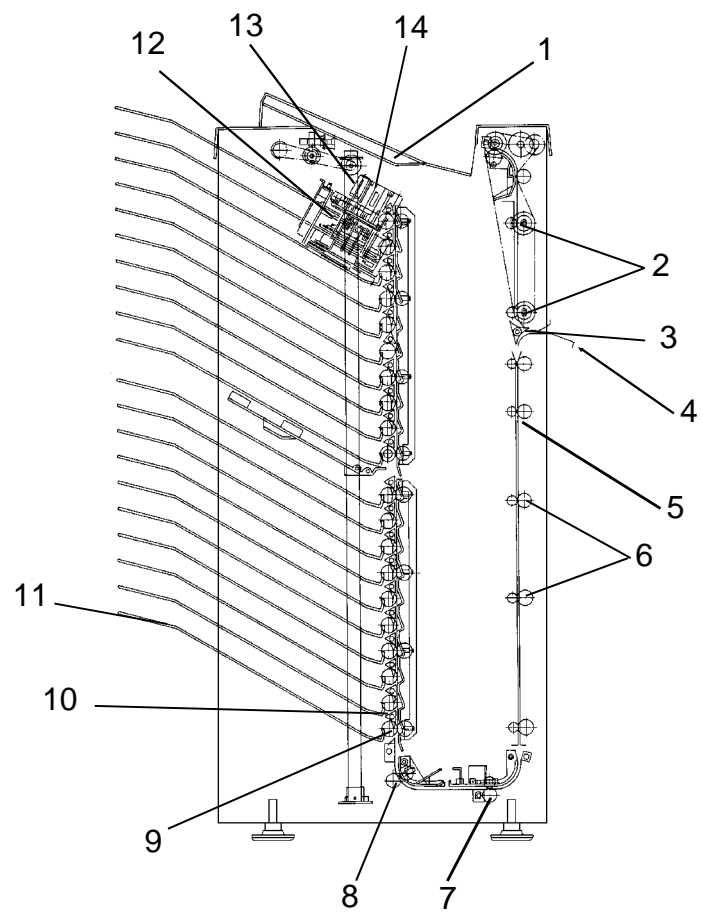
a = 5 ± 2 mm (0.2" ±0.08")
b = 5 ± 2 mm (0.2" ±0.08")



Staple Time:	Within 2 seconds/staple		
Staple Replenishment:	Cartridge exchange (5,000 pieces/cartridge)		
Power Source:	AC 100 V (from copier)		
Power Consumption:	Average:	less than 80 W	
	Maximum:		
	in sort/stack mode:	less than 90 W	
	in staple mode:	less than 170 W	
Dimensions: (W x D x H)	24.1" x 26.6" x40.8"		
Weight:	Approximately 177lbs		

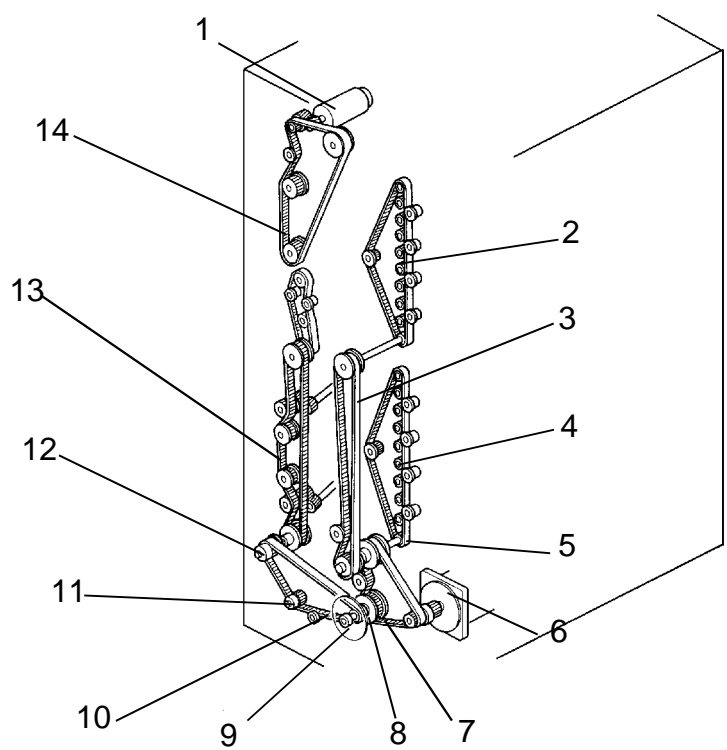
2. COMPONENT LAYOUT

2.1 MECHANICAL COMPONENT LAYOUT

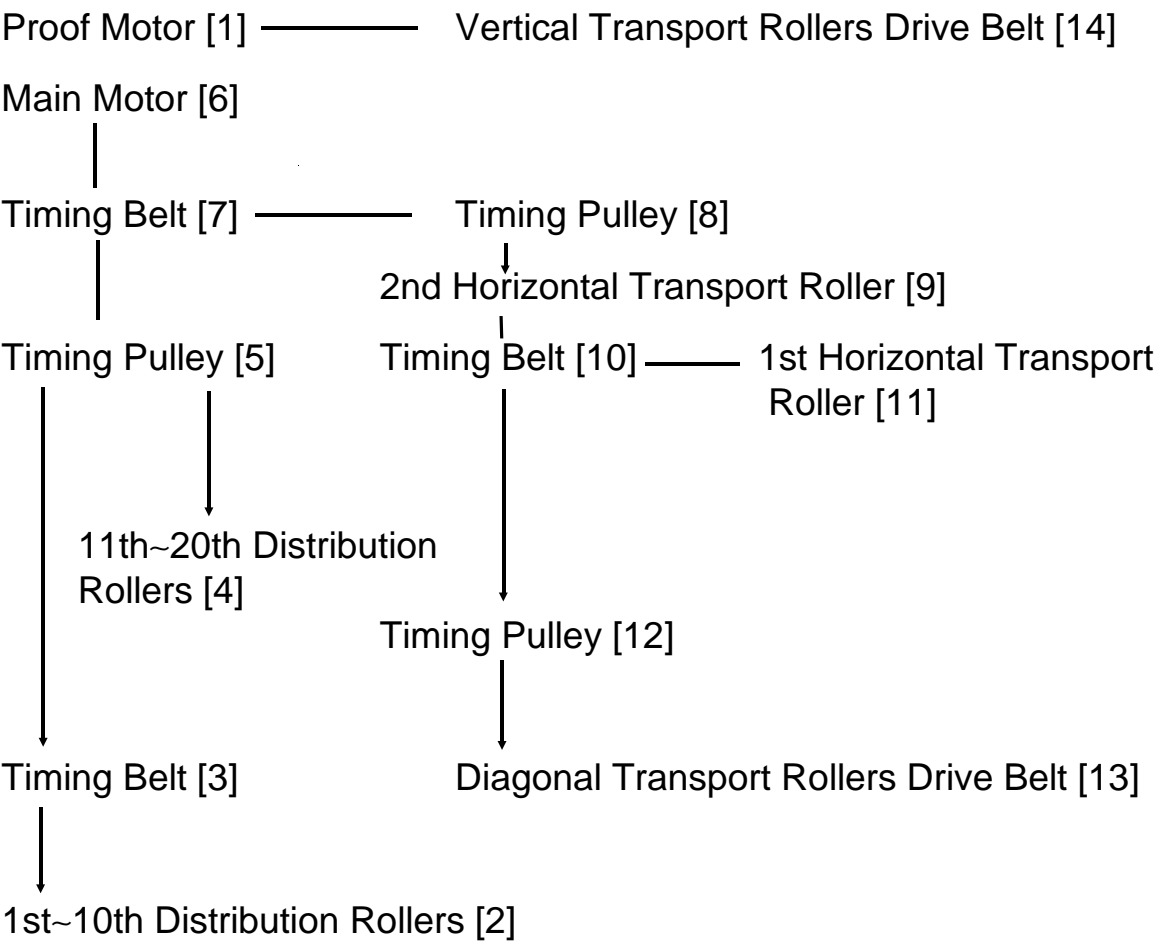


- | | |
|------------------------------------|------------------------------------|
| 1. Proof Tray | 8. 2nd Horizontal Transport Roller |
| 2. Vertical Transport Rollers | 9. Distribution Rollers |
| 3. Upper Entrance Guide | 10. Bin Gates |
| 4. Lower Entrance Guide | 11. Bins |
| 5. Turn Gate | 12. Grip Assembly |
| 6. Diagonal Transport Rollers | 13. Jogger Plate |
| 7. 1st Horizontal Transport Roller | 14. Stapler |

2.2 DRIVE LAYOUT



The drive train is as follows:



2.3 ELECTRICAL COMPONENT DESCRIPTION

Please refer to the Electrical Component Layout on the Reverse side of the Point to Point (Water Proof Paper) for symbol and index number.

SYMBOL	NAME	FUNCTION	INDEX NO.
Motors			
M1	Proof	Drives the vertical transport rollers.	1
M2	Staple Unit Drive	Drives the staple unit up and down to the appropriate bin.	5
M3	Stapler	Feeds the staples and drives the stapler hammer.	9
M4	Grip	Drives the grippers forward and backward into the bin to grip the copies and bring them to the stapling position.	11
M5	Bin Side Plate Drive	Drives the bin side plate.	16
M6	Jogger	Drives the jogger plate to jog the copies against the bin side plate.	20
M7	Main	Drives the distribution, horizontal transport, and diagonal transport rollers.	21
Sensors			
S1	Exit	Detects paper jams at the sorter exit (Proof Tray).	2
S2	Staple Unit H.P.	Detects if the staple unit is in the home position.	6
S3	Grip H.P.	Detects if the grippers are in the home position.	10
S4	Staple Unit Position	Detects the position of the staple unit.	12
S5	Bin Transport	Detects paper jams between the entrance guide and the horizontal transport rollers in the sort/stack or staple mode.	15
S6	Bin Side Plate Release	Detects if the bin side plate is in the released position.	18

SYMBOL	NAME	FUNCTION	INDEX NO.
S7	Bin Side Plate H.P.	Detects if the bin side plate is in the home position.	19
S8	Jogger H.P.	Detects if the jogger plate is in the home position.	22
S9	Timing	Provides pulses to the sorter stapler main control board.	24
S10	Bin/Jam (LED)	Detects if there is paper jams at the distribution section and detects if there is paper in the bins (light emitting element).	30
Sensors			
S11	Bin/Jam (Photo Tr.)	Detects paper jams at the distribution section and detects if there is paper in the bins (light receiving element)	17
S12	Paper	Detects whether copies are under the hammer.	14
S13	Staple H.P.	Detects if the staple hammer is in the home position.	8
S14	Staple End	Detects the staple end.	7
Switches			
SW1	Door Safety	Controls the 100 V ac line.	4
SW2	Door Safety	Controls the 24 V dc line.	3
Solenoids			
SOL 1	Grip	Opens and closes the grippers to grip copies on the bins.	13
SOL 2 ~20	Bin	Opens and closes the bin gate to direct the copies into the appropriate bin.	28
SOL 21	Turn Gate	Opens and closes the turn gate to direct the copies into either the proof tray or the bins.	29

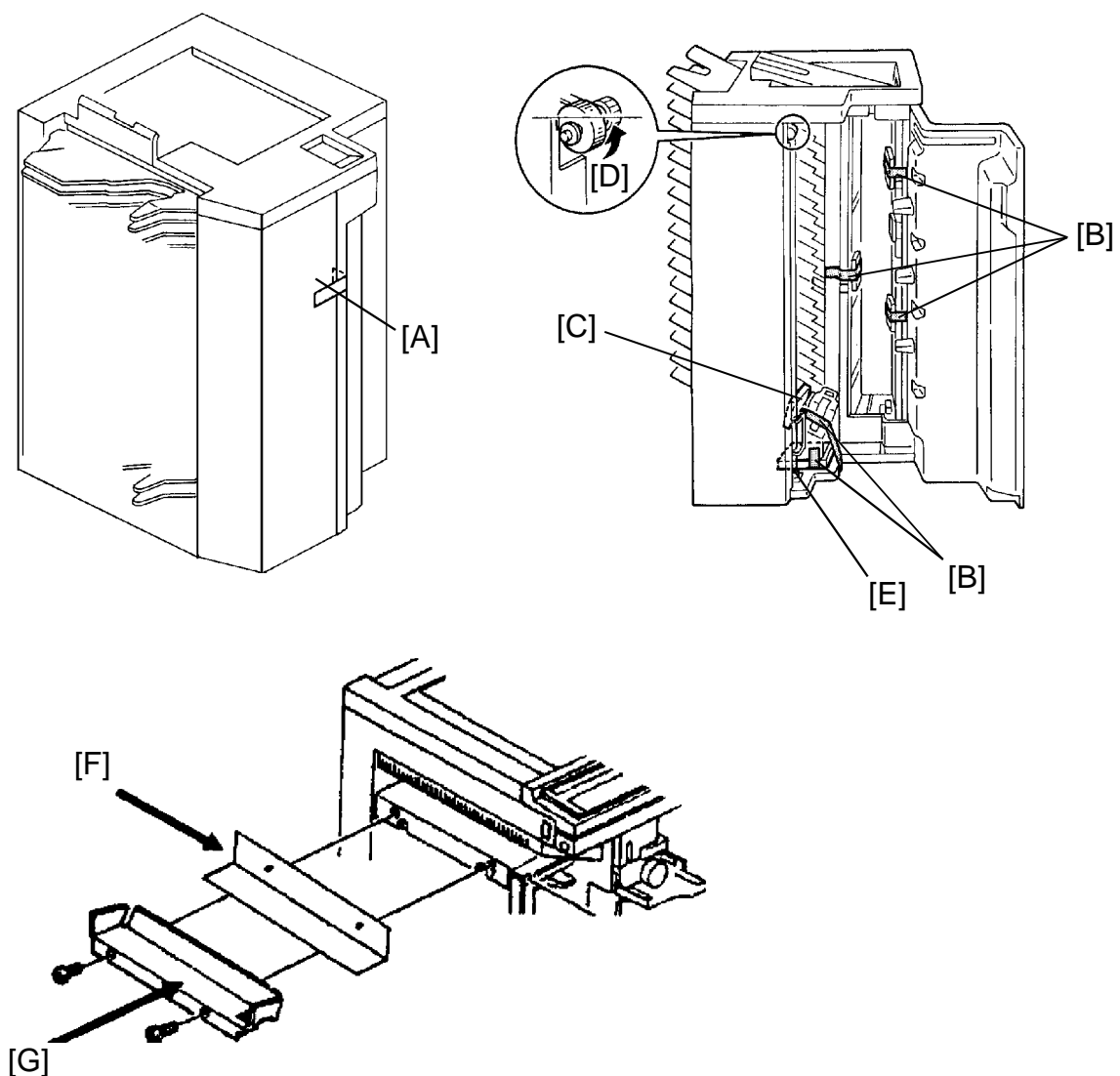
SYMBOL	NAME	FUNCTION	INDEX NO.
Circuit Board			
PCB 1	Main Control	Controls all sorter stapler functions.	26
PCB 2	Bin Solenoid	Interfaces between the bin gate solenoids (sol 2~10) and the main control board.	27
PCB 3	Bin Solenoid	Interfaces between the bin gate solenoids (sol 11~20) and the main control board.	25
Capacitor			
C	Main Motor	Motor start capacitor.	23

3. ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

1. Front Connecting Bracket	1
2. Rear Connecting Bracket	1
3. Locking Bracket	2
4. Fixing Bracket	1
5. Sorter Stapler Key Sheet	1
6. Staple Position Decal	1
7. Staple Cartridge	1
8. Stepped Screw	2
9. Decal Switch.....	1
10. Philips Pan Head Screw -4 x 10.....	2
11. Grounding Screw with Toothed Washer.....	1
12. Philips Pan Head Screw-M4 x 6	6
13. Caster Stopper	2
14. New Equipment Condition Report (--17, --27 machines only)	1
15. Envelope for N.E.C.R. (--17 machine only)	1
16. Installation Procedure	1

4. INSTALLATION PROCEDURE



NOTE: The sorter adapter (A328) should be installed before the sorter stapler is.

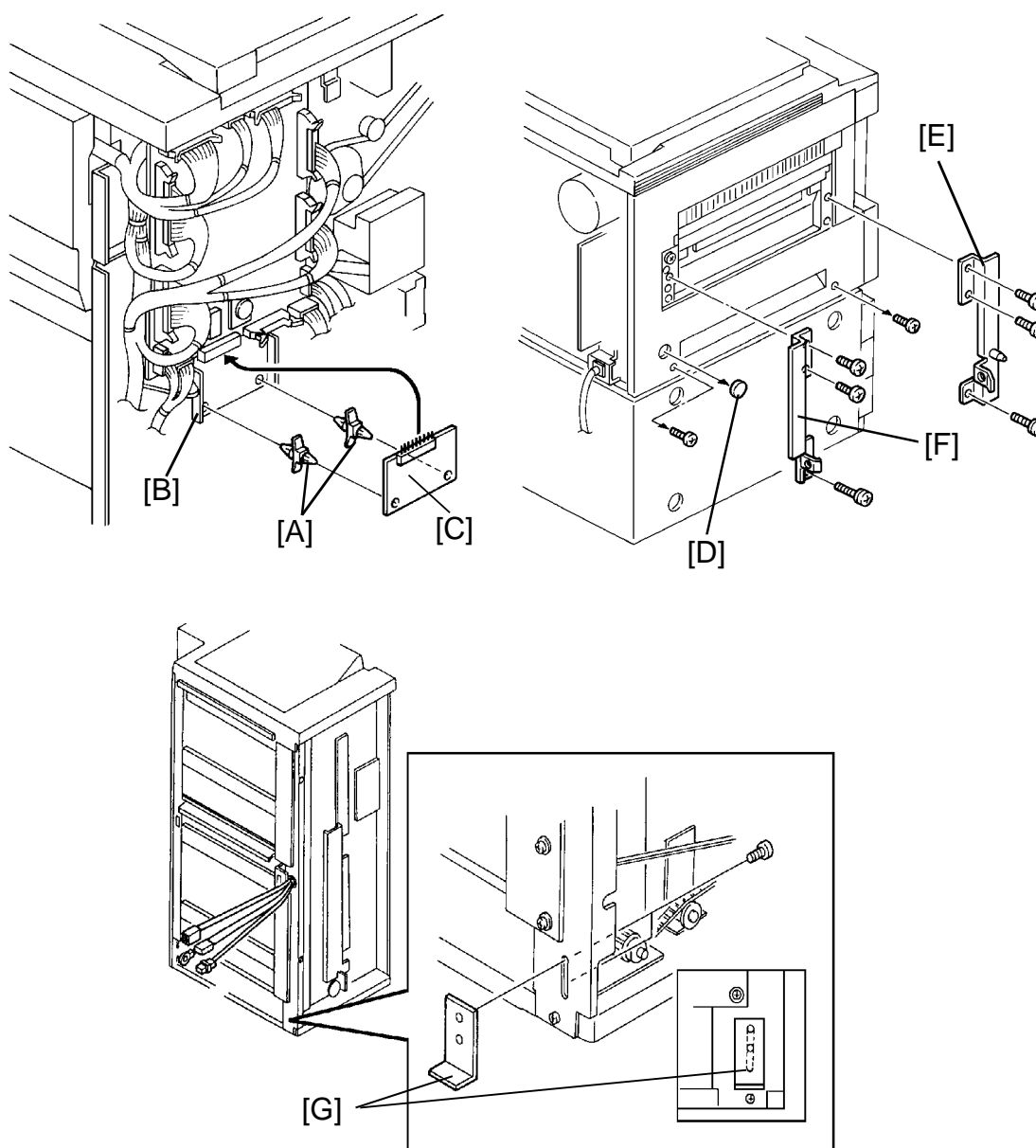
The copier must be placed on the paper tray unit, or the system table so that the copier and sorter stapler paper paths meet.

An interface PCB (A344) is also necessary.

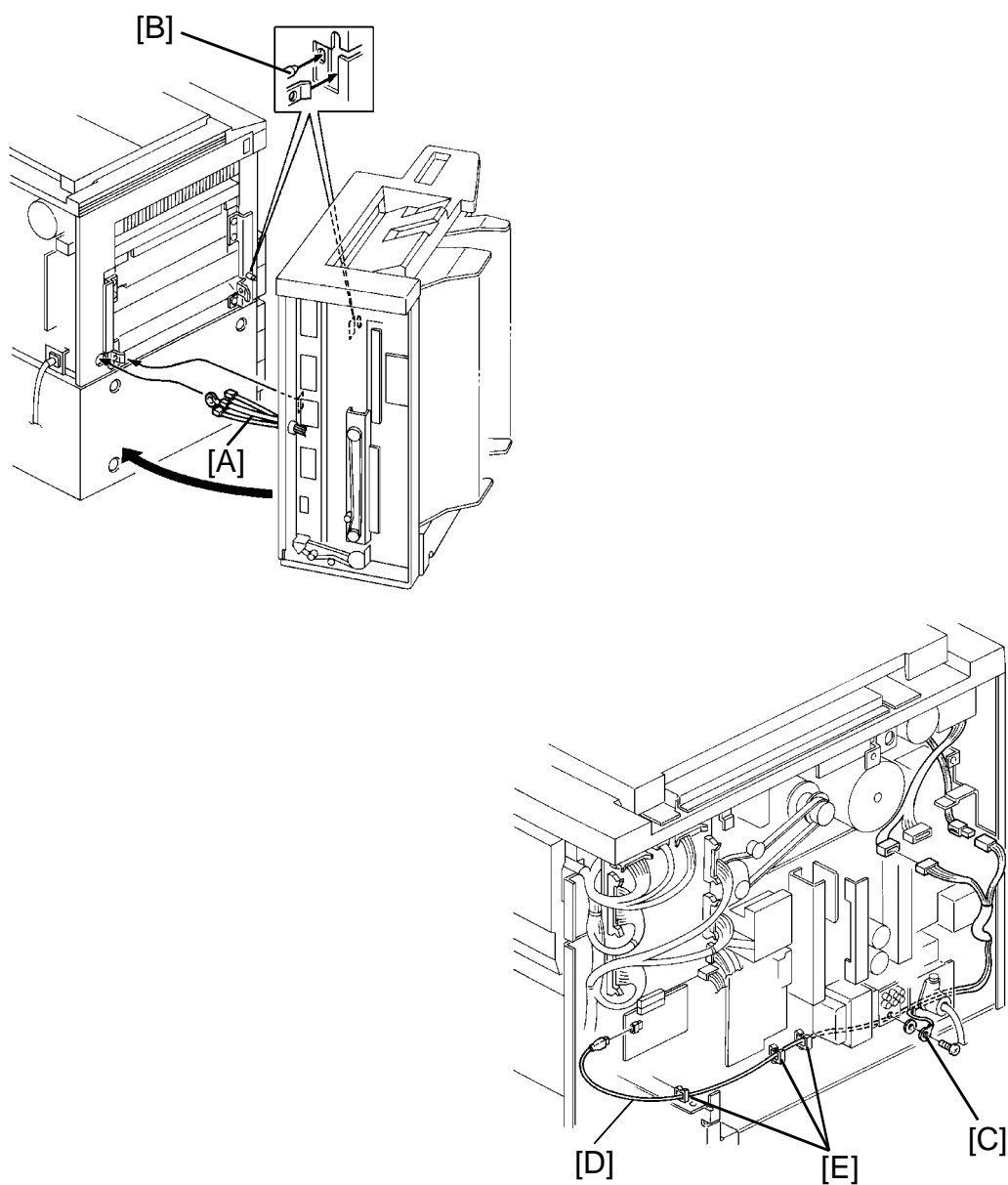
CAUTION: Unplug the copier power cord before starting the following procedure.

1. Remove the strip of tape [A] on the front door.
2. Open the front door, then remove 5 strips of tape [B] and a styrofoam block [C]. Raise the staple unit by slowly rotating the staple unit positioning knob [D] counterclockwise, to provide clearance to remove the sponge cushion [E] from underneath the stapler.

NOTE: When the ST22 is installed, locate the mylar Guide [F] packaged in the ST22 and install it behind the cover plate [G]. The cover plate [G] is packaged with the sorter adapter.



3. Remove the copier rear cover (remove 2 screws and loosen 2 screws).
4. Set the 2 locking supports [A] on the copier main board bracket [B] and install the interface PCB [C] onto CN114 on the main board as shown.
5. Remove the plastic cap [D] and two lower screws from the copier left cover as shown.
6. Install the front and rear connecting brackets [E], [F] on the copier as shown (1 long and 2 short screws each).
7. Remove the sorter stapler rear cover (remove 3 screws, loosen 1 screw).
8. For now, install the fixing bracket [G] on the sorter stapler at the lowest position (2 screws). (See step 12)



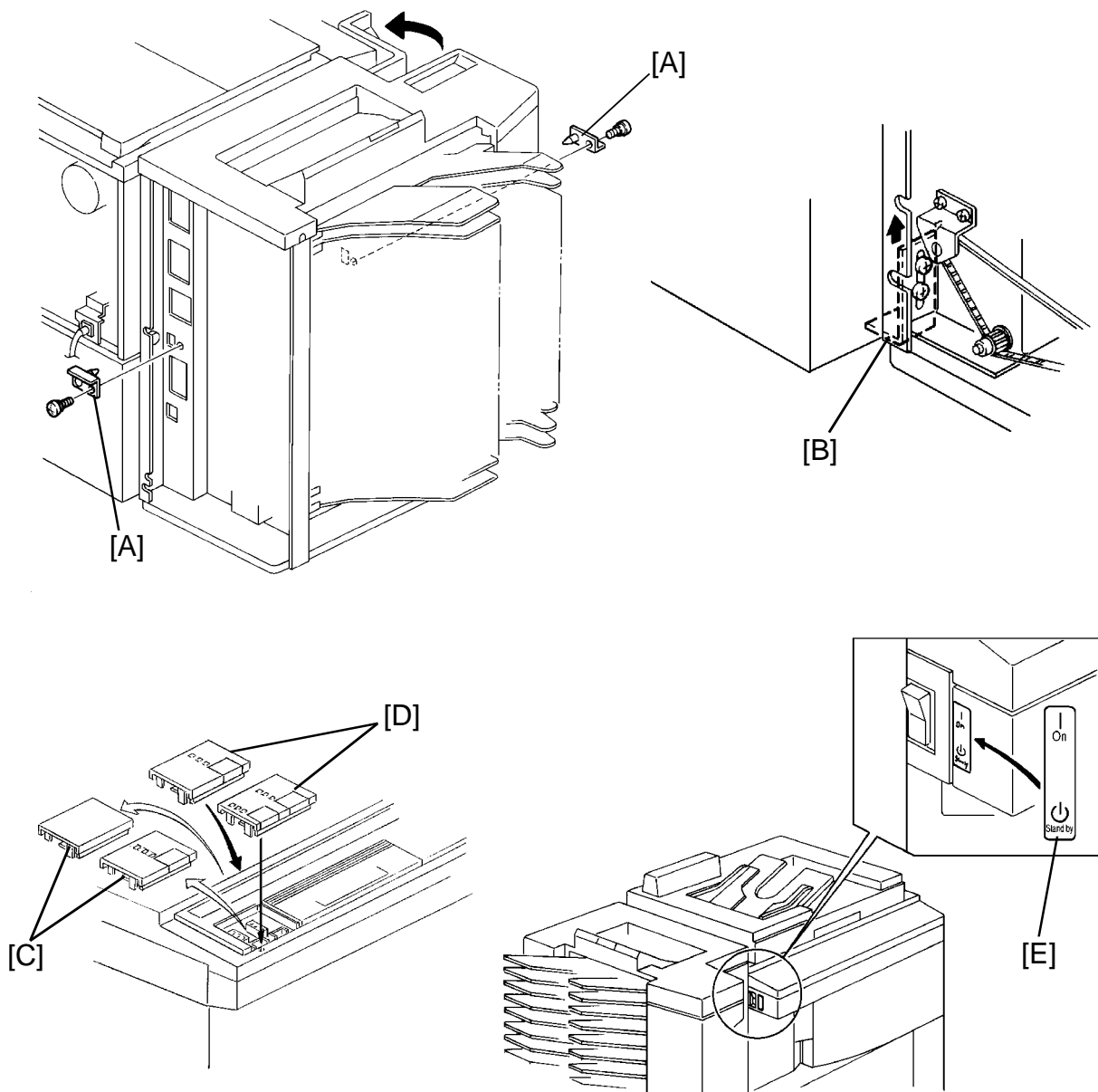
9. Pass the harnesses [A] through the access hole and connect the sorter stapler with the copier. Make sure that the stud on the front connecting bracket [B] is positioned in the sorter stapler positioning hole.

NOTE: Be careful not to damage the harnesses when connecting the sorter stapler with the copier.

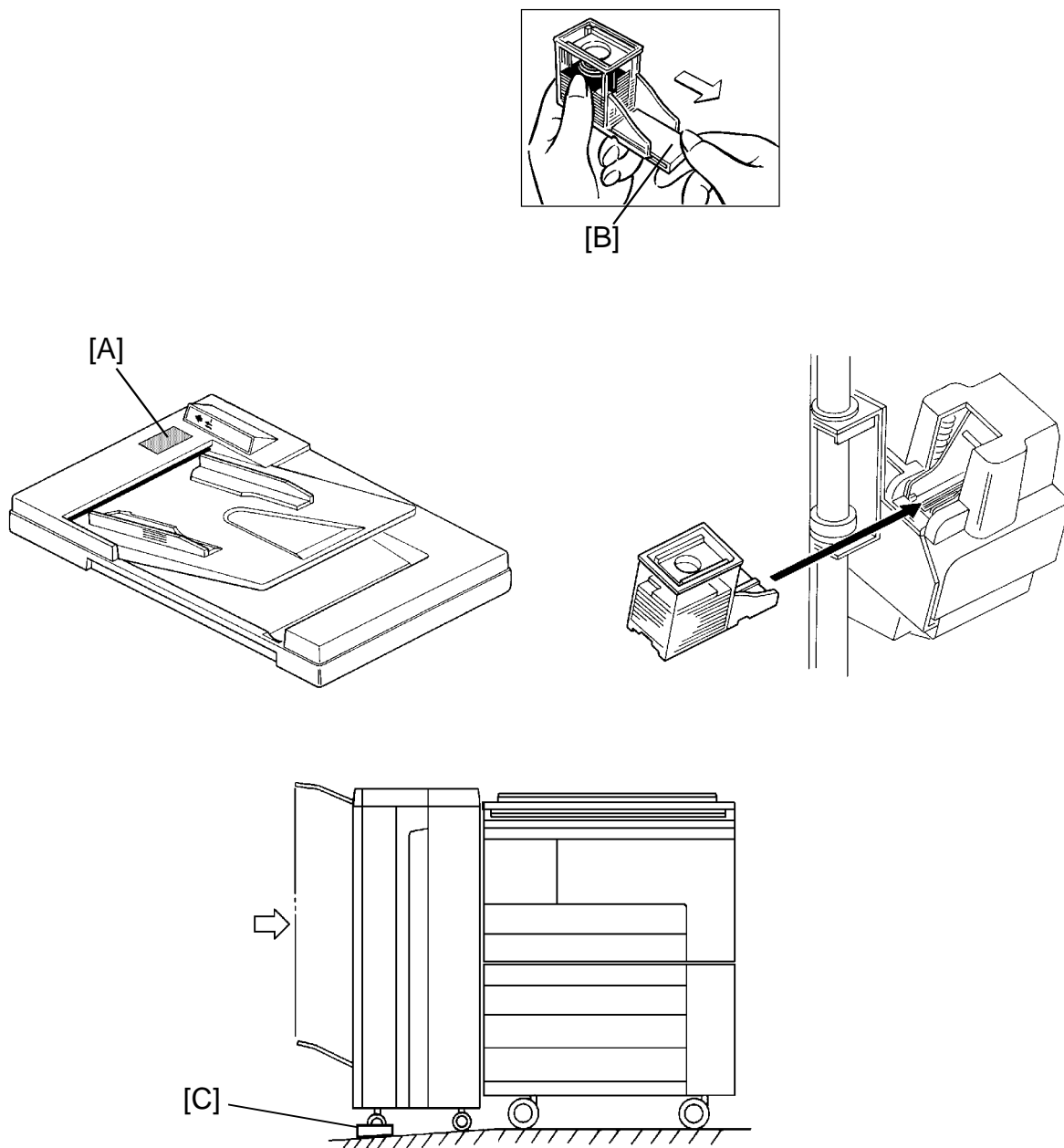
10. Secure the protective earth wire [C] under the power cord terminal (1 grounding screw with toothed washer), and couple the 3 connectors as follows:

Sorter Stapler Connector	Copier Connector
2p (Red)	2p (Red)
4p (White)	4p (White)
2p (Fiber Optic Cable)	CN703 on the interface PCB

NOTE: Run the fiber optics cable [D] as shown and set it in the wire saddles [E].



11. Install the locking brackets [A] at the front and the rear to secure the sorter stapler to the copier (1 stepped screw each).
12. Loosen the 2 screws, lift the fixing bracket [B] up against the paper tray unit base plate and retighten the screws.
13. Remove the left plastic cover [C] on the operation panel and install the sorter key top and cover [D] instead.
(The sorter key top and cover are provided as an accessory for the copier.)
14. Stick the main switch decal [E] on the copier as shown.



15. Stick the staple position decal [A] on the ARDF as shown. (If there is no ARDF, stick it on the corresponding position of the platen cover.)
16. Remove the green plastic clip [B] from the staple cartridge, and install the cartridge in the stapler.
17. Reinstall the covers and plug in the copier.
18. Press the sorter stapler against the copier and fix its position by placing caster stoppers [C] as shown.
19. Turn on the main switch of the copier and test the operation of the sorter stapler.

NOTE * The copier recognizes automatically that the sorter stapler is installed, so it is unnecessary to set SP#71.
 * The stapler will not be stapling for the first 10 or so copies until the first staple comes to the proper position from the cartridge.

5. SERVICE TABLES (MAIN CONTROL BOARD)

5.1 DIP SWITCHES

DIP SW 100						0 : OFF	1 : ON
1	2	3	4	5	6	Function	Remarks
* 1	0	0	0	0	0	Proof Motor Speed Adjustment 1 (350 mm/s)	#1
	1	0	0	1	0	Proof Motor Speed Adjustment 2 (300 mm/s)	#1
	1	0	0	0	0	Sorter Free Run	#2
	0	1	0	0	0	Staple Free Run	#3
	1	1	0	0	0	Sorter & Staple Free Run	#4
	0	0	1	0	0	Lowers Staple Unit (To 6th Bin)	
	1	0	1	0	0	Lowers Staple Unit (To 20th Bin)	
	0	1	1	0	0	Opens Bin Side Plate	
0	0	0	0	0	1	Bin/Jam Sensor Adjustment	

NOTE: *1 Confirm the setting from DIP SW100-2 to -6 before turning on DIP SW100-1 (Start SW function).

Turn off DIP SW100-1 to stop the function.

Remarks

#1: The proof motor and turn gate solenoid turn on.
Adjustment 1: For model A053
Adjustment 2: For model A069/A073/A074

#2: The main motor turns on. The bin solenoids turn on in order and the jogger motor drives the jogger plate (B5 lengthwise size) as each bin solenoid turns on.

#3: The staple unit (grip assembly and stapler) movement is repeated from the 1st to 20th bins. When there is no paper in a bin, stapling operation is skipped for that bin.

#4: #2 and #3 are repeated together.

Combinations other than those above are used only at the factory.

5.2 LED AND VARIABLE RESISTORS

LED NO.	VR NO.	FUNCTION
100	100	Adjusts jam sensor sensitivity.
101	101	Adjusts bin sensor sensitivity.
102	102	Adjusts proof motor speed.

5.3 TEST POINTS

NUMBER	FUNCTION
TP 100	GND
TP 101	+ 5 V
TP 102	+ 24 V

6. PREVENTIVE MAINTENANCE SCHEDULE

6.1 PM TABLE

C: Clean L: Lubricate

	EM	320K	NOTE
Transport, Distribution, and Exit Rollers	C		Damp cloth
Bins	C		Damp cloth
Bin/Jam, Paper Sensors	C		Blower brush
Bushings	L		Launa oil or equivalent; if bushings generate noise.
Gears	L		Grease-501; if gears generate noise.
Worm gears	L		Heat Resisting Grease MT-78; if worm gears generate noise.
Diagonal Transport Rollers		C	Damp cloth
Diagonal Transport Stopper		C	Alcohol
Staple Unit Guide Rod, Pad	L		Launa oil

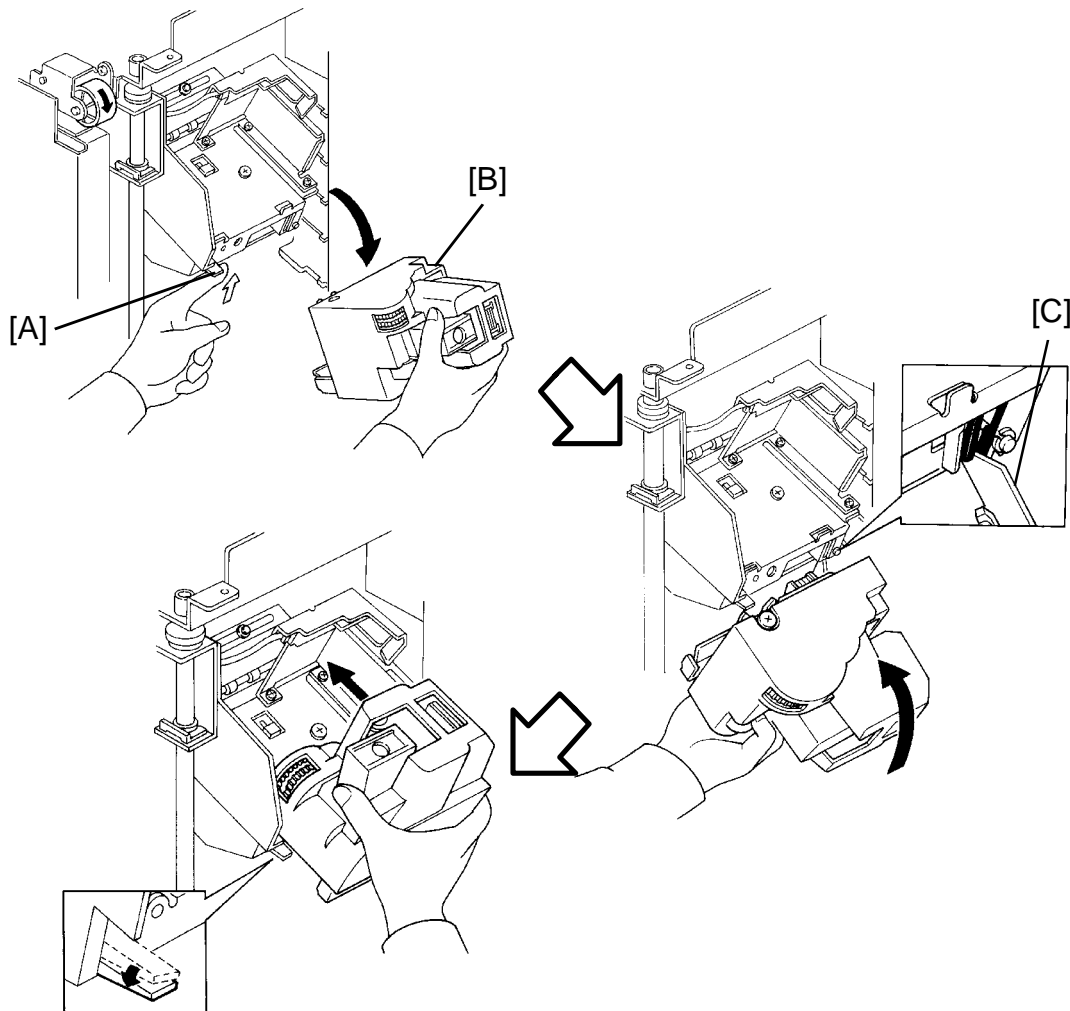
6.2 REGULAR PM EXPLANATION

The diagonal transport rollers and/or the diagonal transport stopper become dirty because of paper dust and toner adhering to them. This causes copies to transport incorrectly, skew, and jam. Cleaning them is required at regular intervals.

If the diagonal transport stopper mylar is deformed or damaged, copies transport incorrectly, skew, and jam. In this case, replace the mylar.

7. REPLACEMENT AND ADJUSTMENT

7.1 STAPLER REMOVAL AND REINSTALLATION



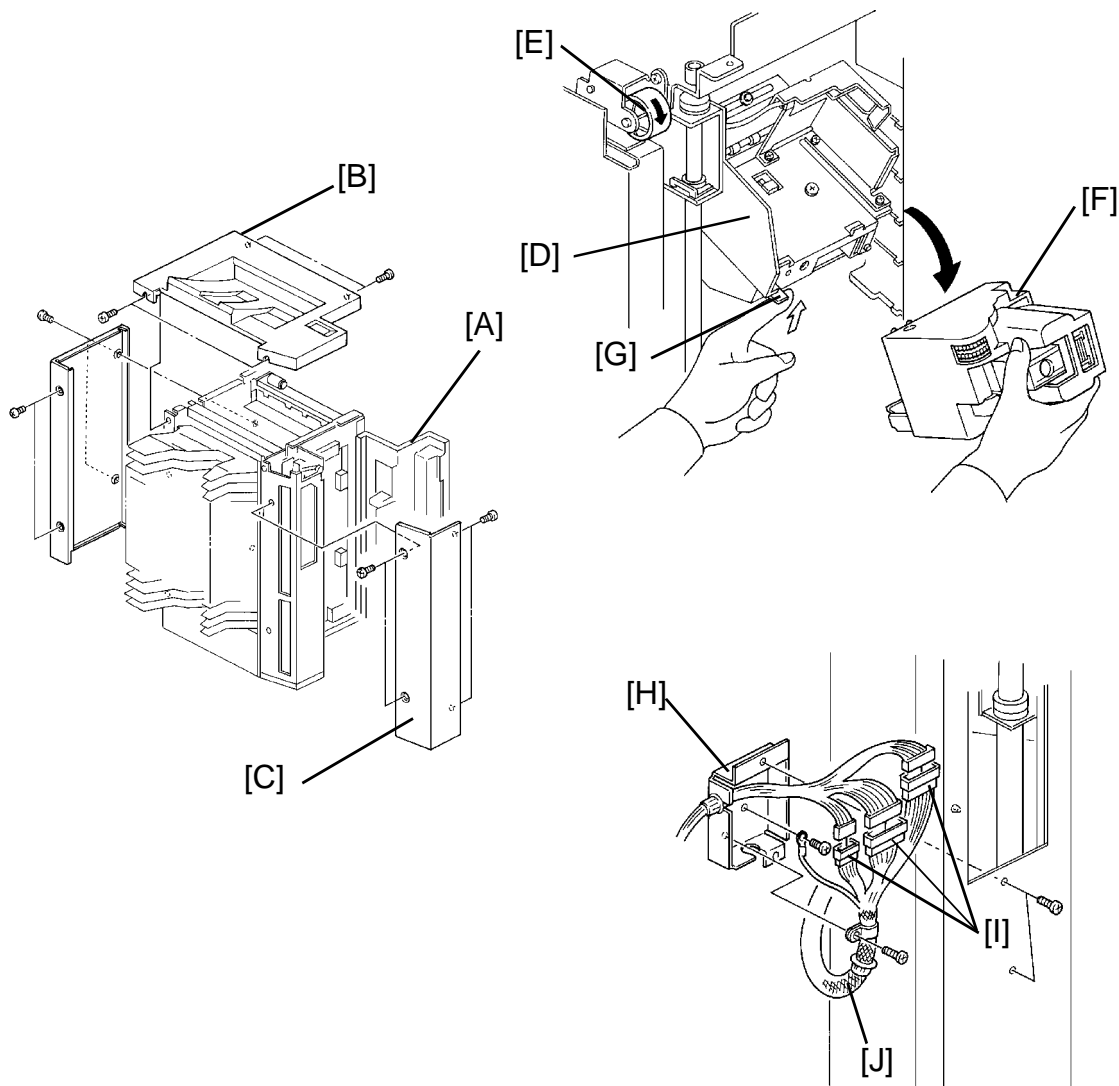
1. Open the front cover.
2. Push up the stapler release lever [A] and remove the stapler [B].
3. Reinstall the stapler.

NOTE: 1. The connector shutter release plate [C] should be inserted as shown.

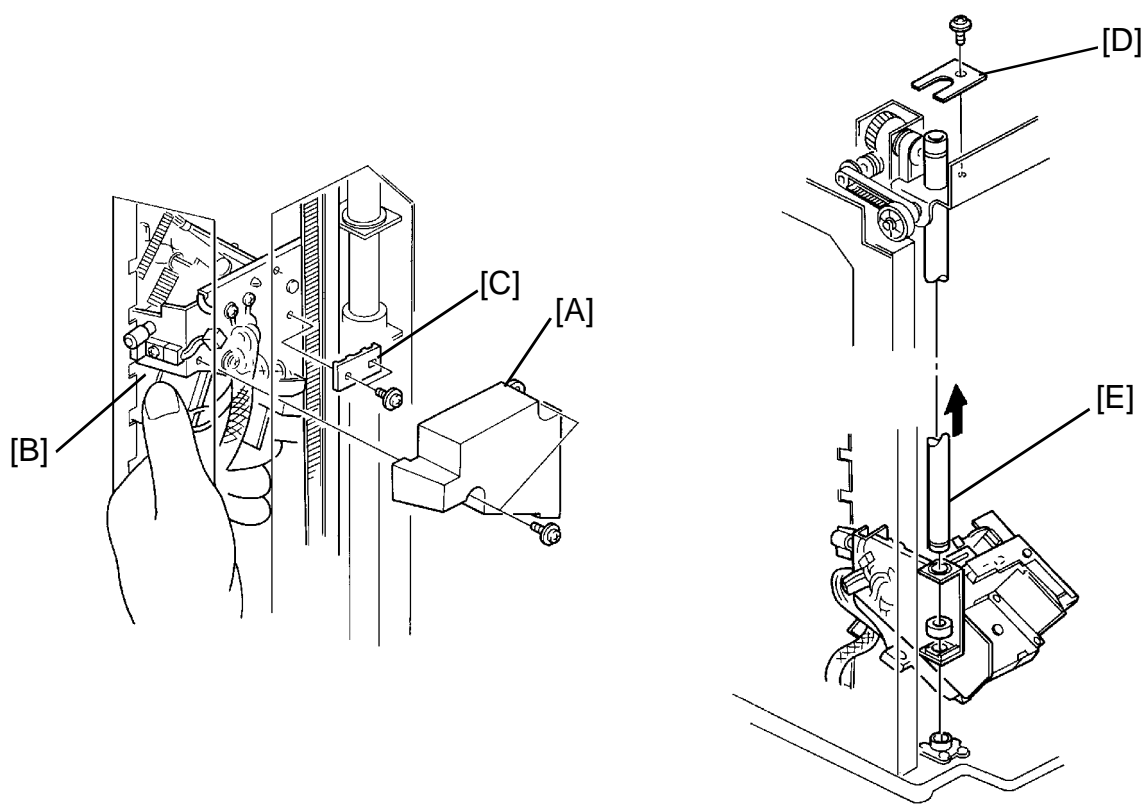
2. Make sure that the stapler release lever is lowered to the original position after the stapler is correctly set.

7.2 GRIP ASSEMBLY REMOVAL AND GRIP SOLENOID ADJUSTMENT

7.2.1 Grip Assembly Removal

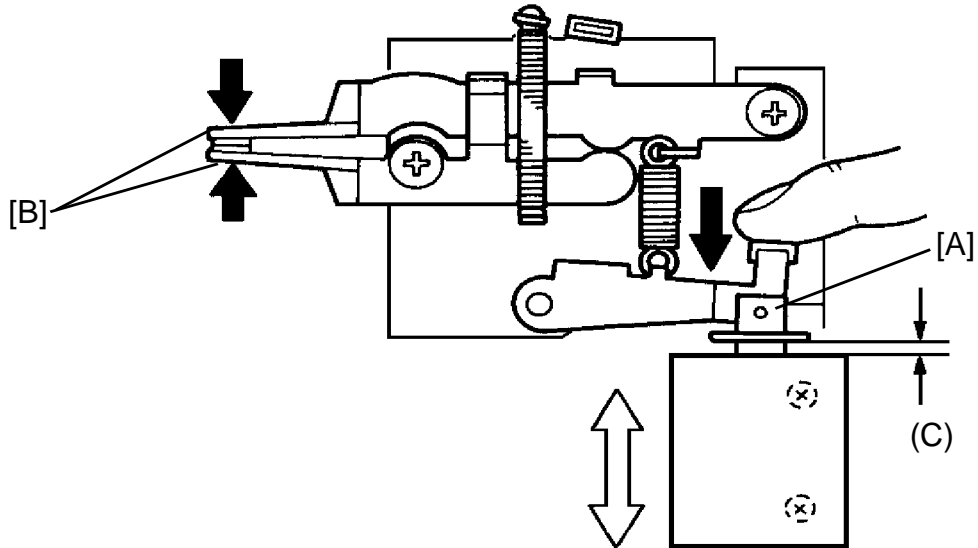


1. Open the front cover [A].
2. Remove the proof tray [B] (5 screws) and front cover [C] (4 screws).
3. Move the grip assembly [D] between the 1st bin and 7th bin by turning the knob [E].
4. Remove the stapler [F] by pressing up the stapler release lever [G].
5. Remove the frame connector cover [H] (2 screws).
6. Disconnect the 3 connectors [I] and remove the staple harness [J] (2 screws) from the frame connector cover.



7. Remove the harness cover [A] (2 screws).
8. While holding the grip assembly [B], remove the timing belt clamp [C] (2 screws). Gently lower the grip assembly to the bottom.
9. Remove the fixing plate [D] (1 screw).
10. While holding the grip assembly, pull out the staple unit guide rod [E] from the grip assembly.

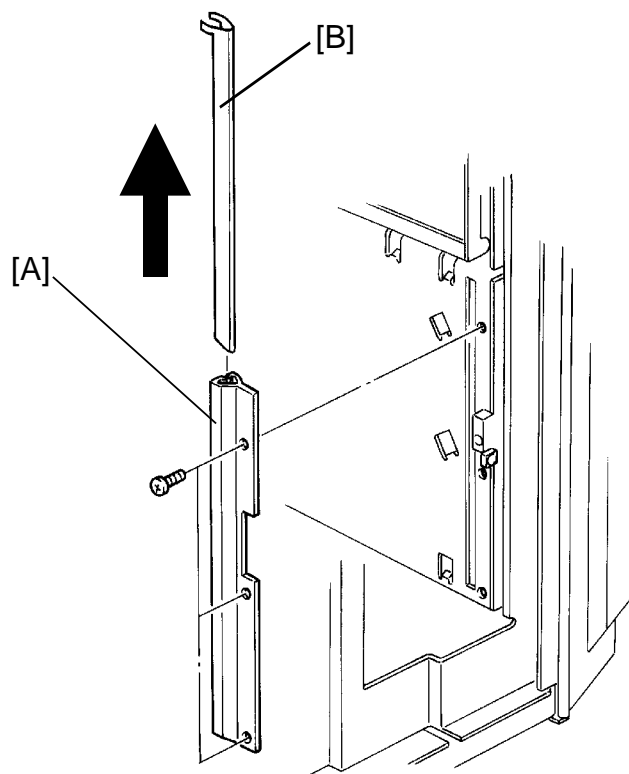
7.2.2 Grip Solenoid Adjustment



Adjustment standard: 2.5 ± 0.5 mm

1. Remove the grip assembly (see the grip assembly removal).
2. Adjust the gripper solenoid stroke (2 screws).
When the solenoid plunger [A] is pressed so that the gripper arms [B] touch each other, the gap (C) should be 2.5 ± 0.5 mm.

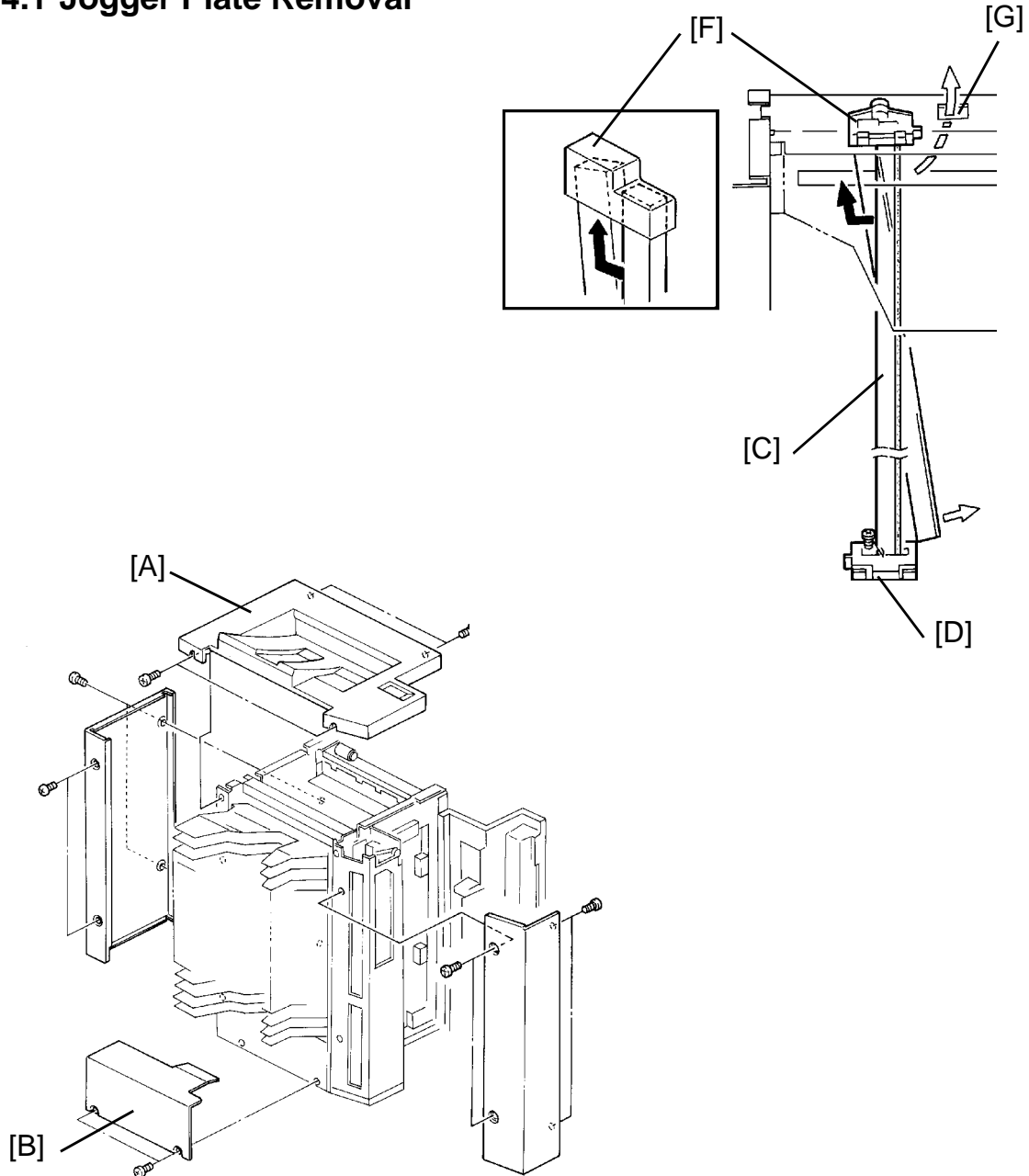
7.3 DIAGONAL TRANSPORT STOPPER MYLAR REPLACEMENT



1. Open the front door.
2. Release the transport plate.
3. Remove the diagonal transport stopper [A] (3 screws).
4. Slide out the mylar [B] from the diagonal transport stopper as shown.

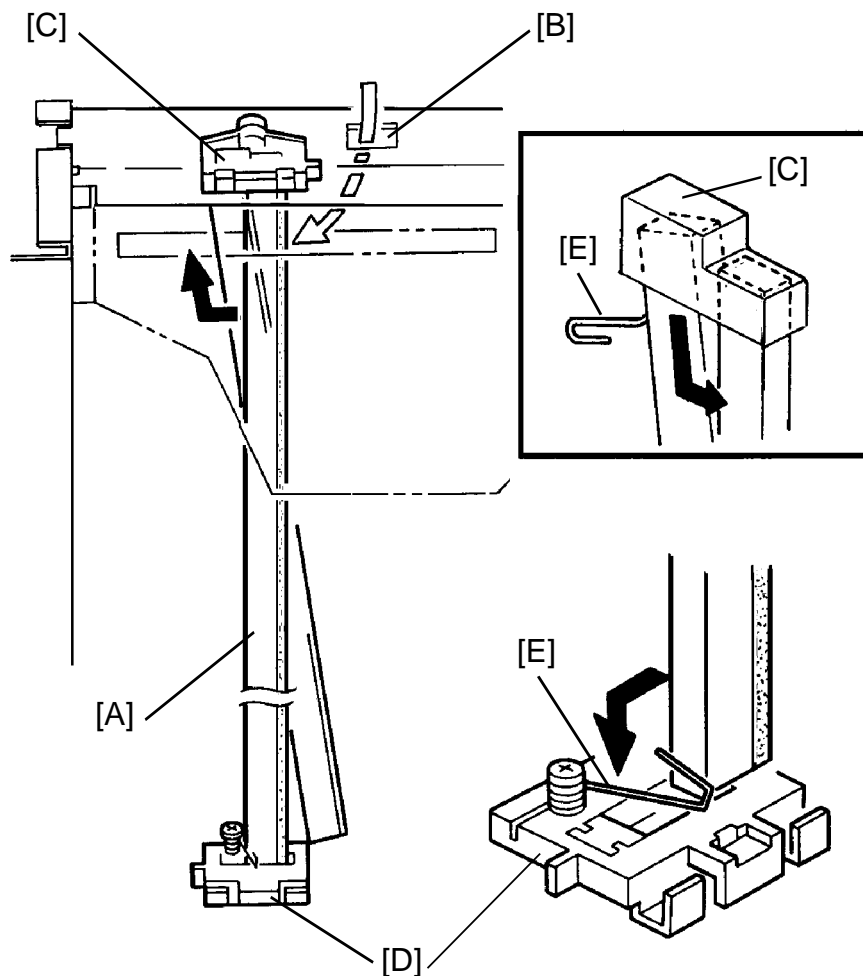
7.4 JOGGER PLATE REMOVAL AND REINSTALLATION

7.4.1 Jogger Plate Removal



1. Remove the proof tray [A] (5 screws) and the bottom cover [B] (2 screws).
2. Push the upper part of the jogger plate [C] to the left and hold it.
3. After that, pull the jogger plate up and hold it.
4. Swing the jogger plate out of the bottom holder [D], and gently let the jogger plate fall out of the upper holder [F].
5. Pull the jogger plate out through the stay hole [G].

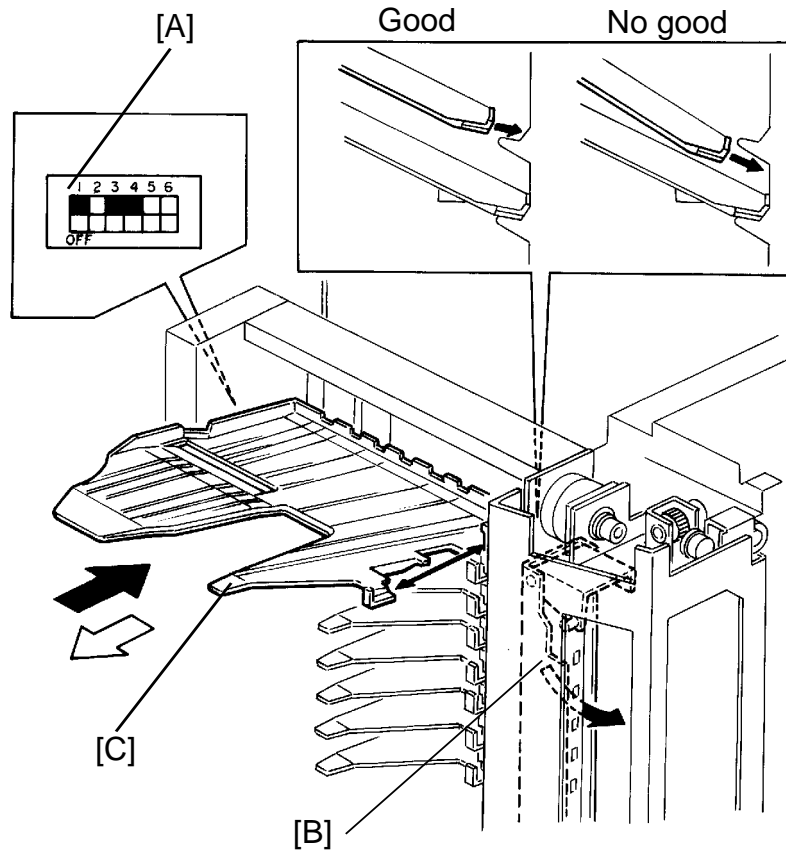
7.4.2 Jogger Plate Reinstallation



1. Insert the jogger plate [A] through the stay hole [B].
2. Insert the jogger plate into the hole of the upper holder [C] as shown and hold it.
3. Position the jogger plate at the lower holder [D].

NOTE: The pressure springs [E] should be placed as shown.

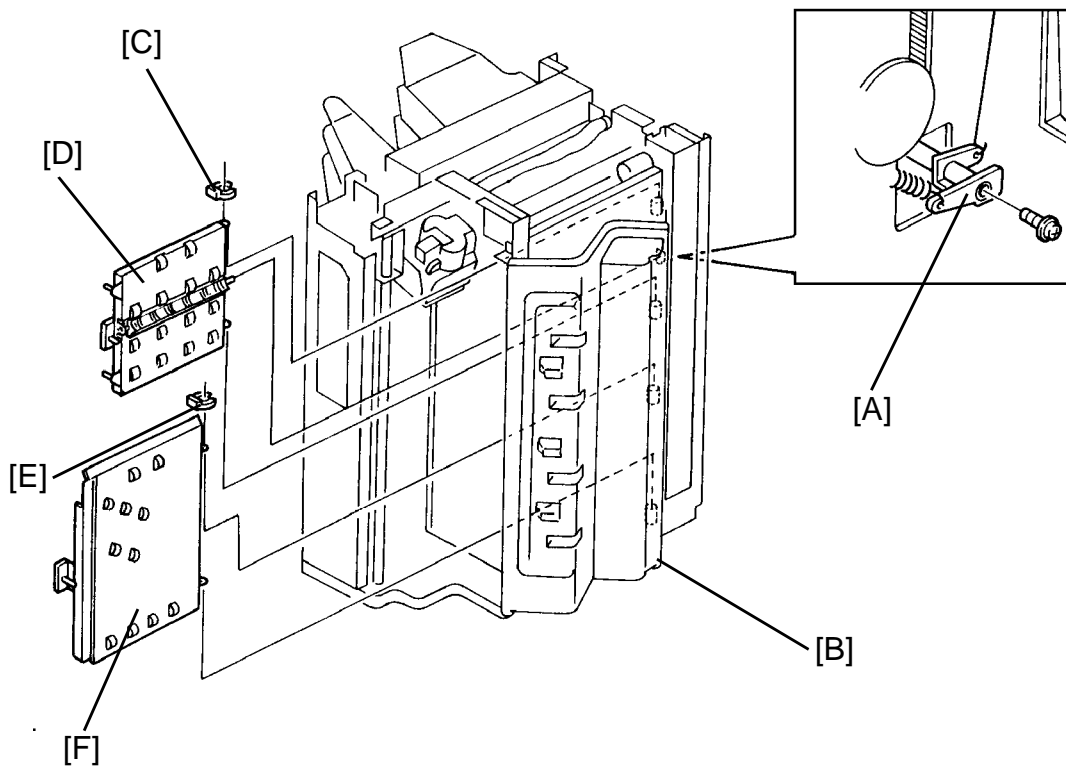
7.5 BIN REMOVAL



1. Remove the front and rear covers (4 screws each).
2. Remove the jogger plate (see jogger plate removal).
3. Turn on the main switch.
4. Turn on DIP SW100-3, -4 and -1 [A]. Make sure you turn on the switches in that order.
5. When the bin side plate [B] is released, turn off the main switch.
6. Pull out the sorting bins [C].

NOTE: 1. The 10th and 20th bins do not have an antistatic brush.
2. When reinstalling the bins be sure that the bins are positioned correctly as shown.
3. After reinstalling the bins, turn off DIP SW100-1, -3 and -4.

7.6 TRANSPORT PLATE REMOVAL



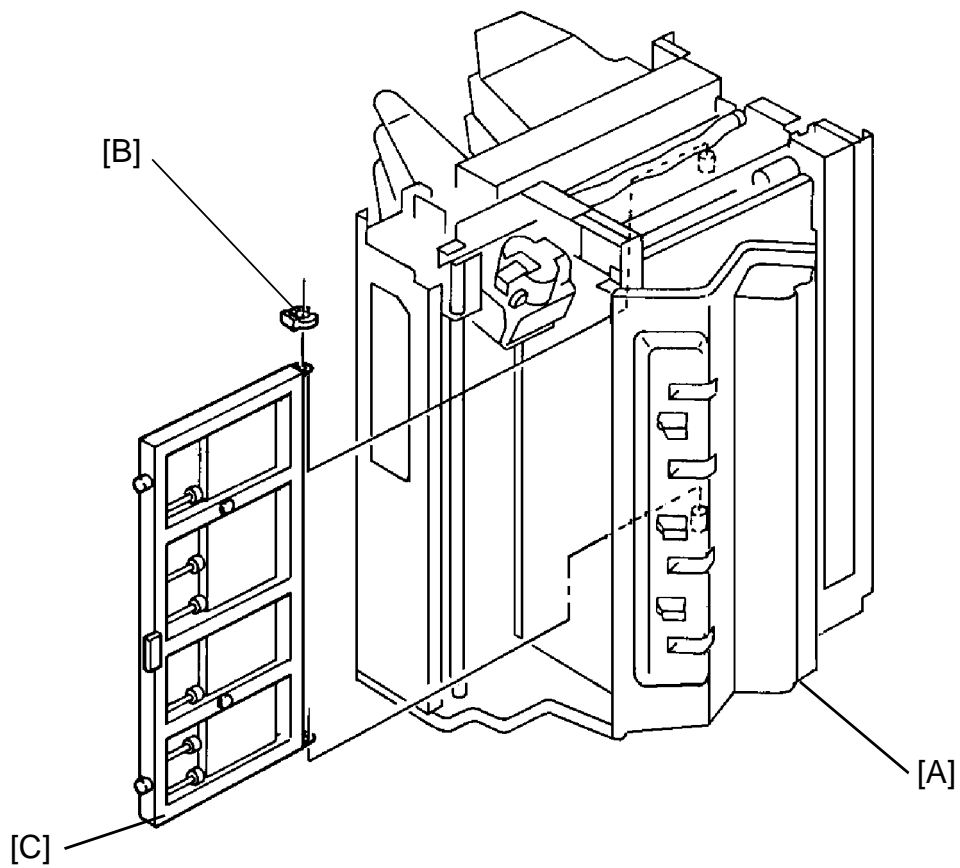
7.6.1 Vertical Transport Plate Removal

1. Remove the rear cover (4 screws).
2. Remove the turn gate lever [A] (1 screw).
3. Open the front door [B].
4. Remove the snap ring [C], then lift and remove the vertical the transport plate [D].

7.6.2 Diagonal Transport Plate Removal

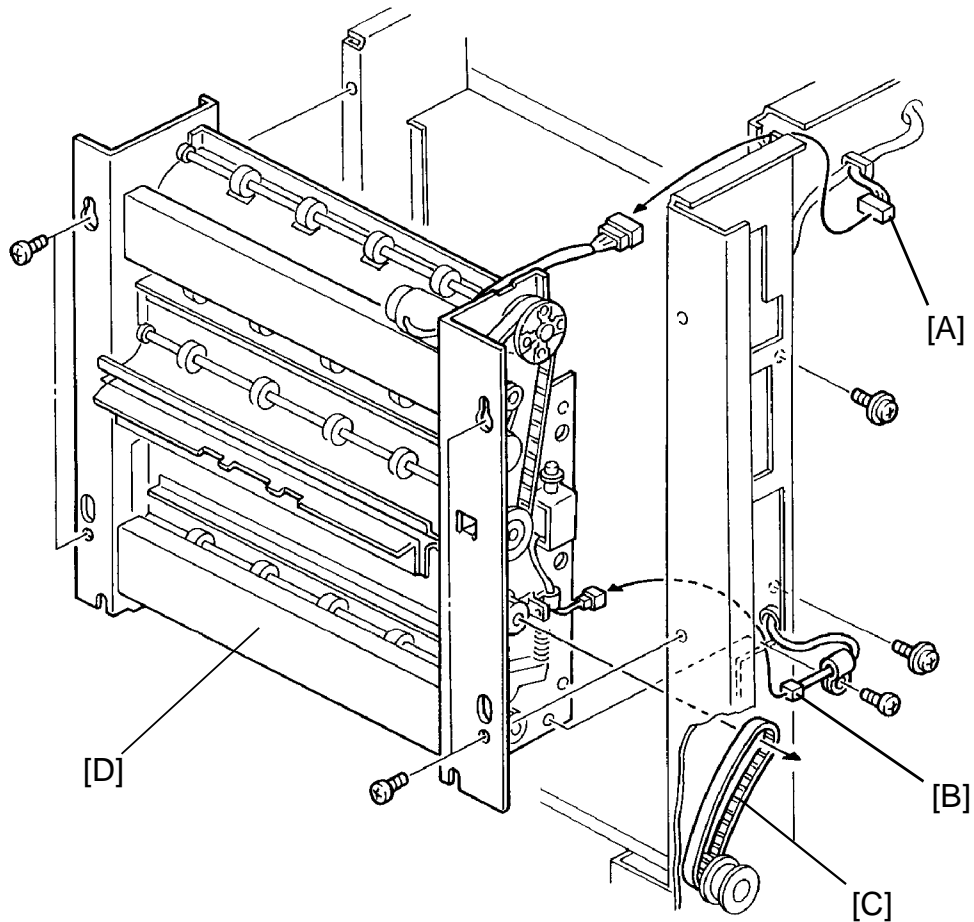
1. Open the front cover [B].
2. Remove the snap ring [E], then lift and remove the diagonal transport plate [F].

7.6.3 Distribution Transport Plate Removal



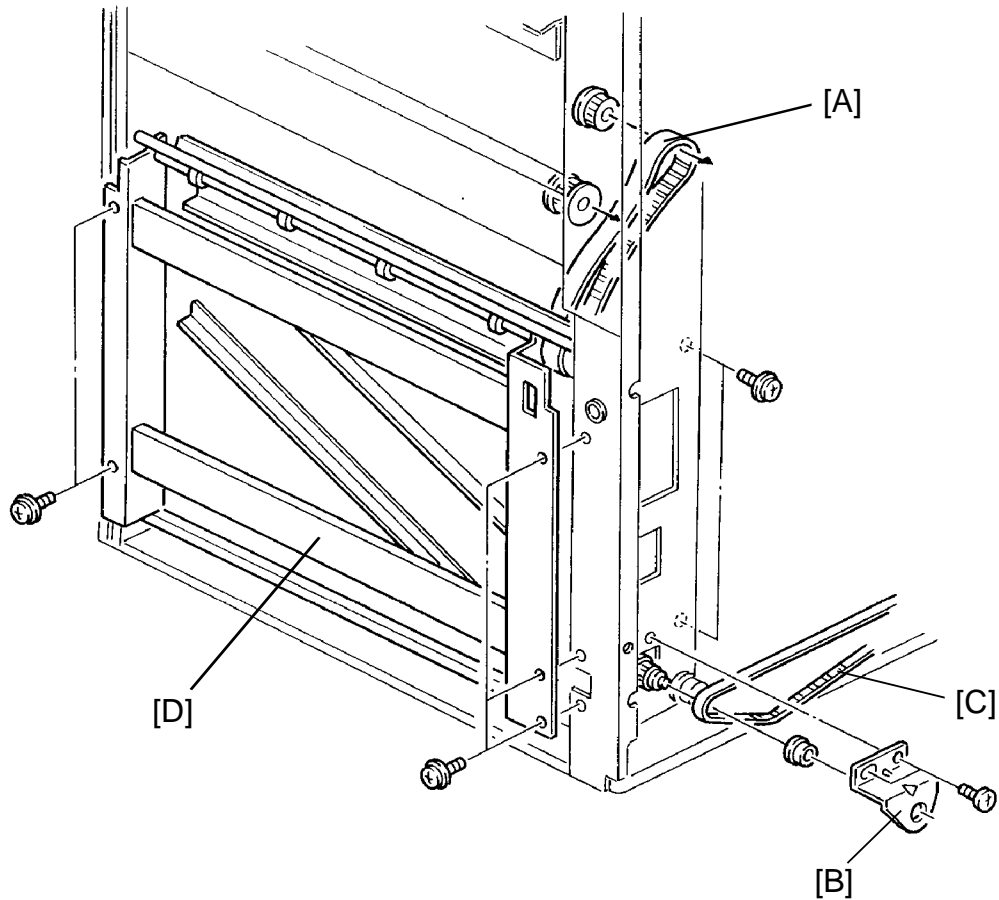
1. Open the front cover [A].
2. Remove the snap ring [B].
3. Lift and remove the distribution transport plate [C].

7.7 VERTICAL TRANSPORT UNIT REMOVAL



1. Remove the proof tray (5 screws) and the rear cover (4 screws).
2. Disconnect the proof motor/exit sensor connector [A] and the turn gate solenoid connector [B].
3. Loosen the timing belt [C].
4. Remove the vertical transport unit [D] (6 screws, and 1 screw for the harness clamp).

7.8 DIAGONAL TRANSPORT UNIT REMOVAL



1. Remove the rear cover (4 screws).
2. Remove the timing belt [A].
3. Remove the support bracket [B] (2 screws) and the timing belt [C].
4. Remove the diagonal transport unit [D] (7 screws).

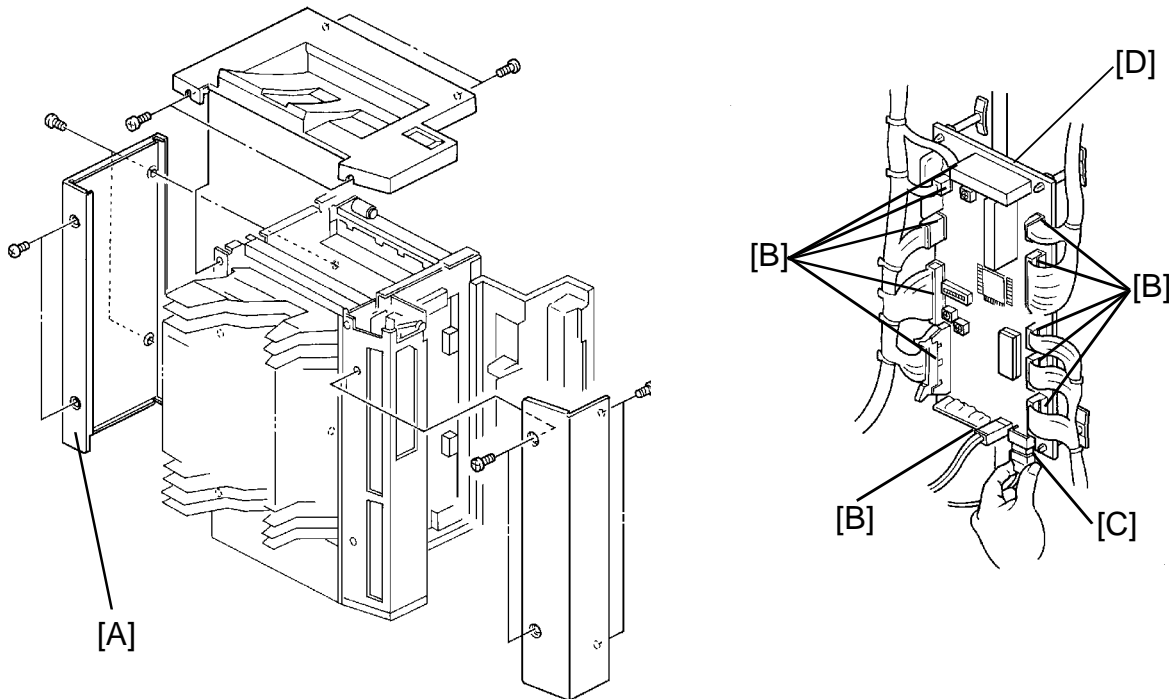
a: Bending (mm)

- | | |
|-----------------------|--------------|
| Timing Belt [A] | Proof Tray |
| Timing Belt [B] | Proof Tray |
| | Bottom Cover |
| Timing Belt [D] | Rear Cover |
| Timing Belt [G] | Rear Cover |
| Timing Belt [C] | Rear Cover |
| Timing Belt [C] | Rear Cover |
| Timing Belt [E] | Rear Cover |
| Timing Belt [H] | Rear Cover |
| Timing Belt [G] | Rear Cover |

- | Timing Belt | Bending | Pressure |
|-------------|---------|----------|
| A | 4 mm | 200±50 g |
| B | 5 mm | 50±20 g |
| C | 5 mm | 140±40 g |
| D | 8 mm | 100±50 g |
| E | 8 mm | 100±50 g |
| F | 6 mm | 100±50 g |
| G | 5 mm | 200±50 g |
| H | 6 mm | 100±50 g |

7.10 MAIN CONTROL BOARD REPLACEMENT AND ADJUSTMENT

7.10.1 Main Control Board Replacement

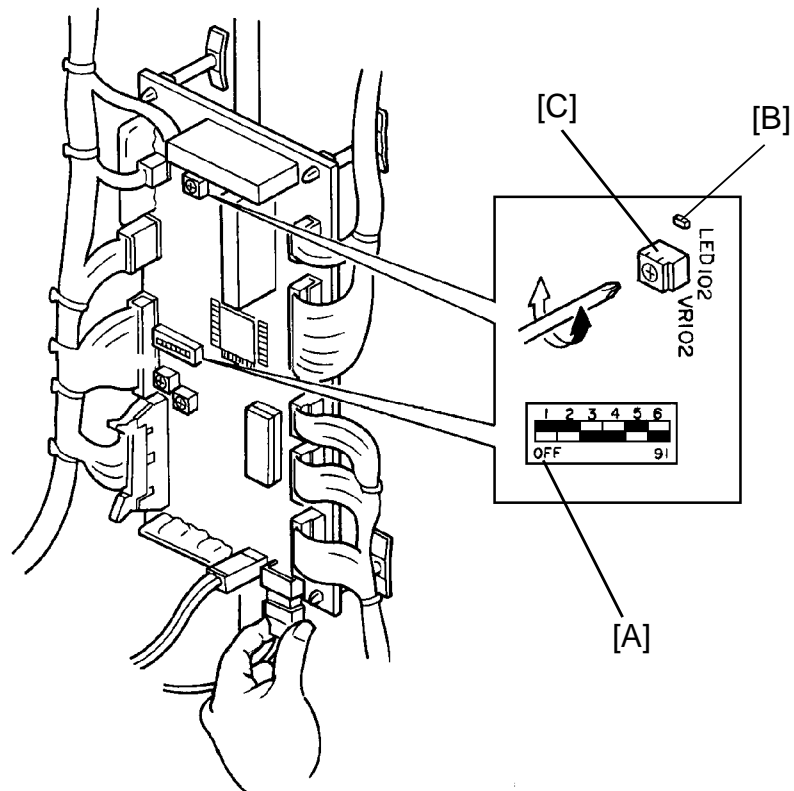


1. Remove the rear cover [A] (4 screws).
2. Disconnect the main control board connectors [B] and fiber cable [C].

NOTE: When disconnecting the fiber cable, do not pull it by the cable, but by the connector.

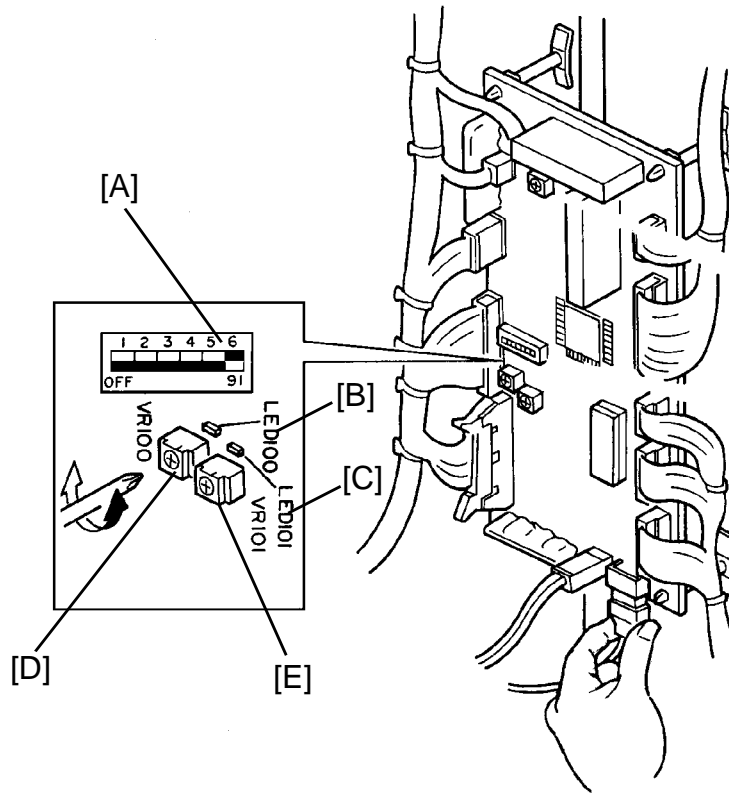
3. Replace the main control board [D] and connect the connectors.
4. Turn on the main switch.
5. Adjust the proof motor speed and bin/jam sensors (see next two pages).
6. Turn off the main switch.

7.10.2 Proof Motor Speed Adjustment



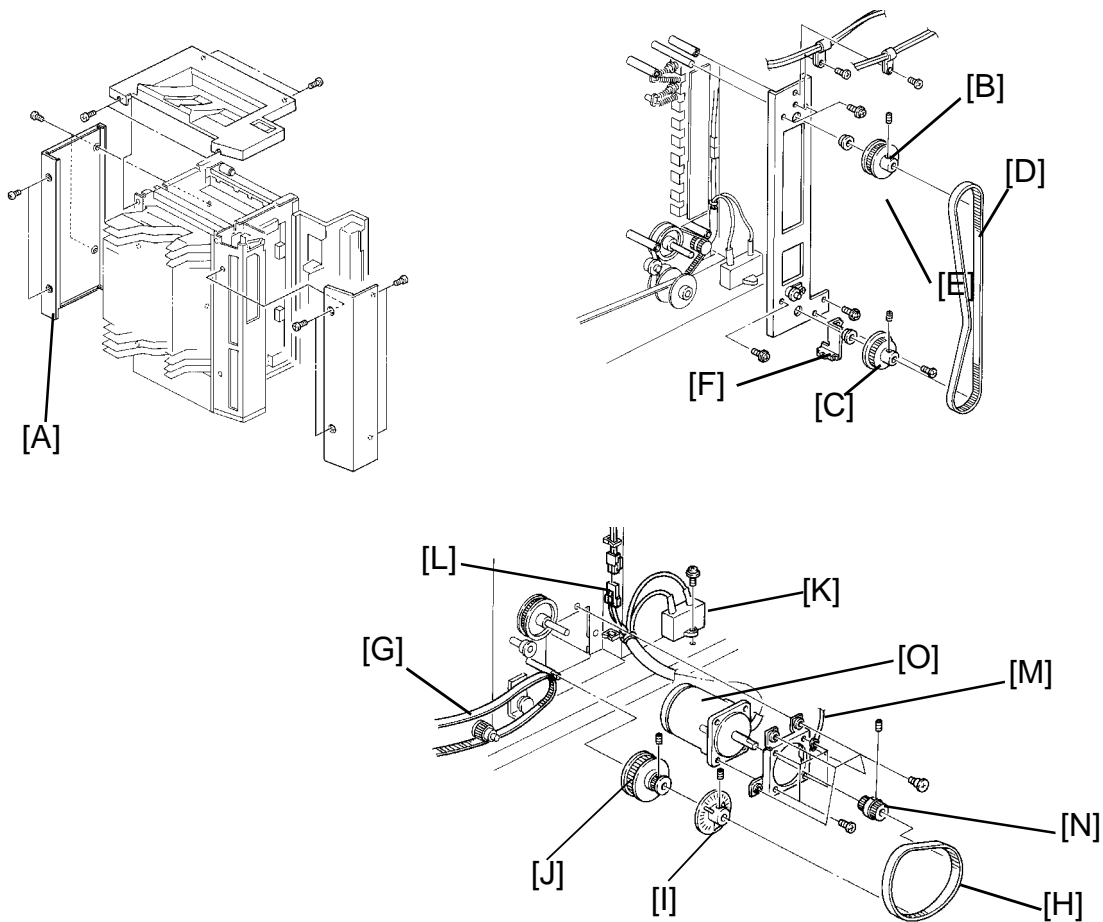
1. Turn on DIP SW100-2, 5 [A].
2. Turn on DIP SW100-1.
3. If LED102 [B] is on, turn VR102 [C] counterclockwise until LED102 turns off.
4. Turn VR102 clockwise until LED102 starts blinking and go on turning until it is continuously on.
5. Turn off DIP SW100-1, -2, -5.

7.10.3 Bin/Jam Sensor Adjustment



1. Turn on DIP SW 100-6 [A].
2. If LED100 [B] and LED101 [C] are on, turn VR100 [D] and VR101 [E] clockwise until LED100 and LED101 turn off.
3. Turn VR100 and VR101 counterclockwise until LED100 and LED101 start blinking and go on turning until they are continuously on.
4. Turn off DIP SW 100-6.

7.11 MAIN MOTOR REPLACEMENT



1. Remove the rear cover [A] (4 screws).
2. Remove the timing pulleys [B, C] (1 Allen screw each) and timing belt [D].
3. Remove the support bracket [E] (4 screws, and 2 screws for the harness clamps).
4. Remove the timing sensor bracket [F] (1 screw).
5. Loosen the timing belt and remove the timing belts [G, H].
6. Remove the disk [I] and the timing pulley [J] (1 Allen screw each).
7. Remove the capacitor [K] (1 screw) and disconnect the main motor harness [L].
8. Remove the grounding wire [M] (1 screw) and the main motor assembly (4 stepped screws).
9. Remove the timing pulley [N] (1 Allen screw) and replace the main motor [O] (3 screws).

NOTE: The timing pulley is used for both the 50 Hz and 60 Hz machines.

50 Hz: 18T

60 Hz: 14T

8. SERVICE CALL CONDITIONS

8.1 CODE # H1 – PROOF MOTOR ERROR

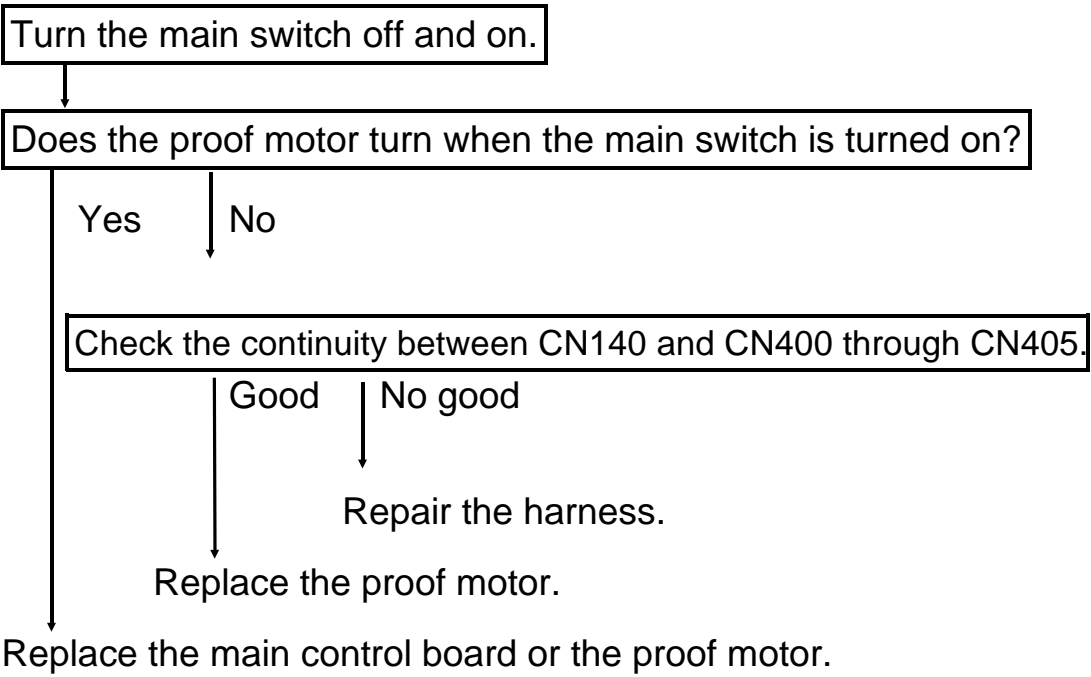
- Definition -

When the proof motor is turning, the encoder pulse takes over 250 msec to change.

- Possible Causes -

- The proof motor is defective
- The main control board is defective

- Action -



8.2 CODE # H2 – TIMING SENSOR OUTPUT ERROR

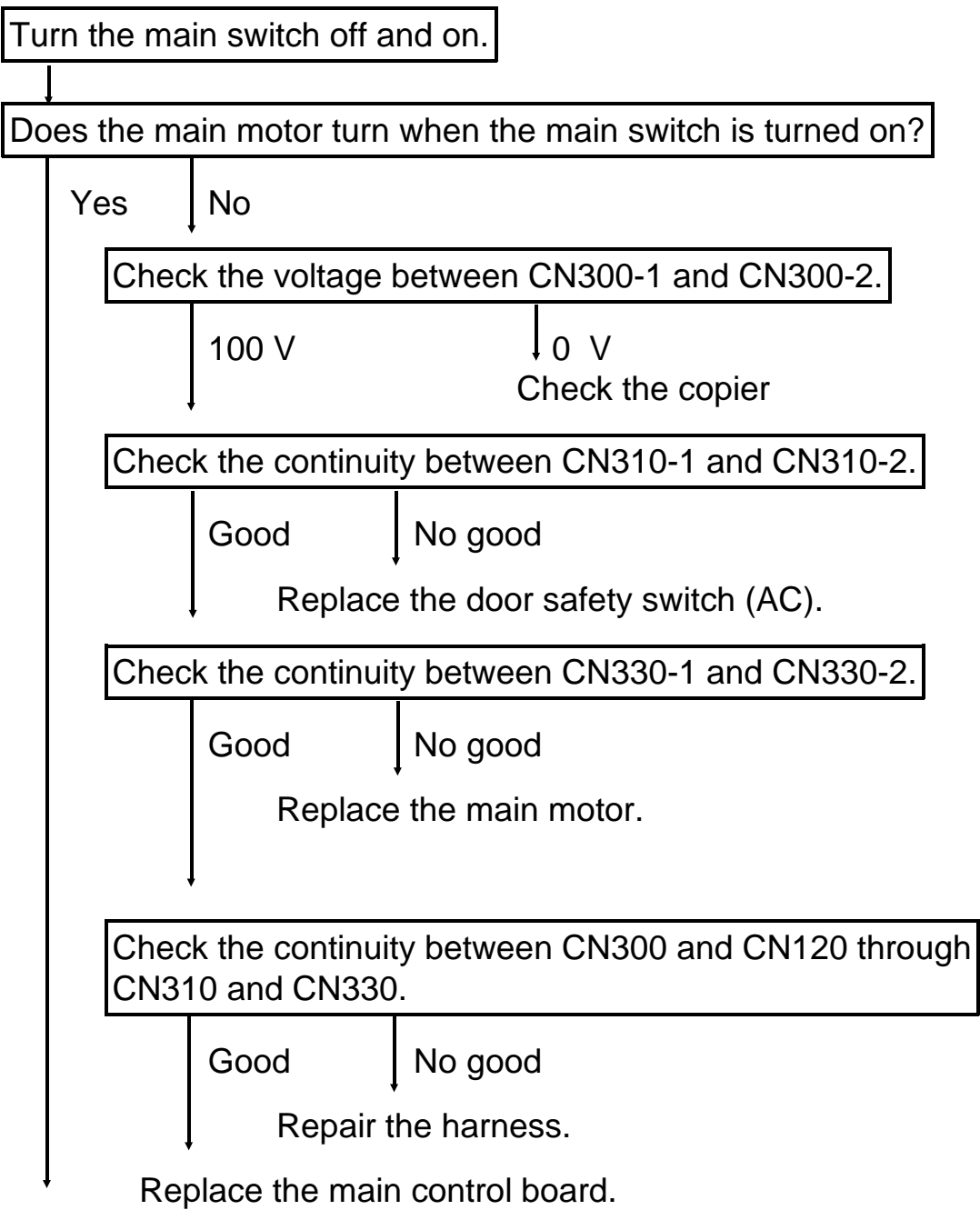
- Definition -

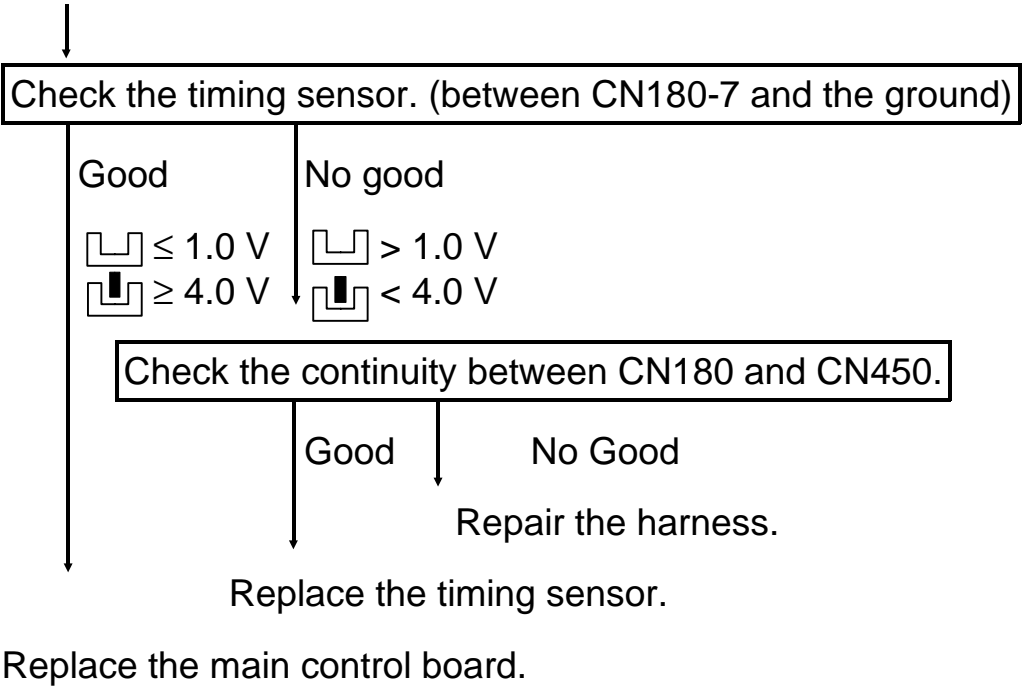
When the main motor is turning, the timing sensor output takes over 100 msec to change.

- Possible Causes -

- The timing sensor is defective
- The main motor is defective
- The main control board is defective

- Action -





8.3 CODE # H3 – JOGGER H.P. SENSOR OUTPUT ERROR

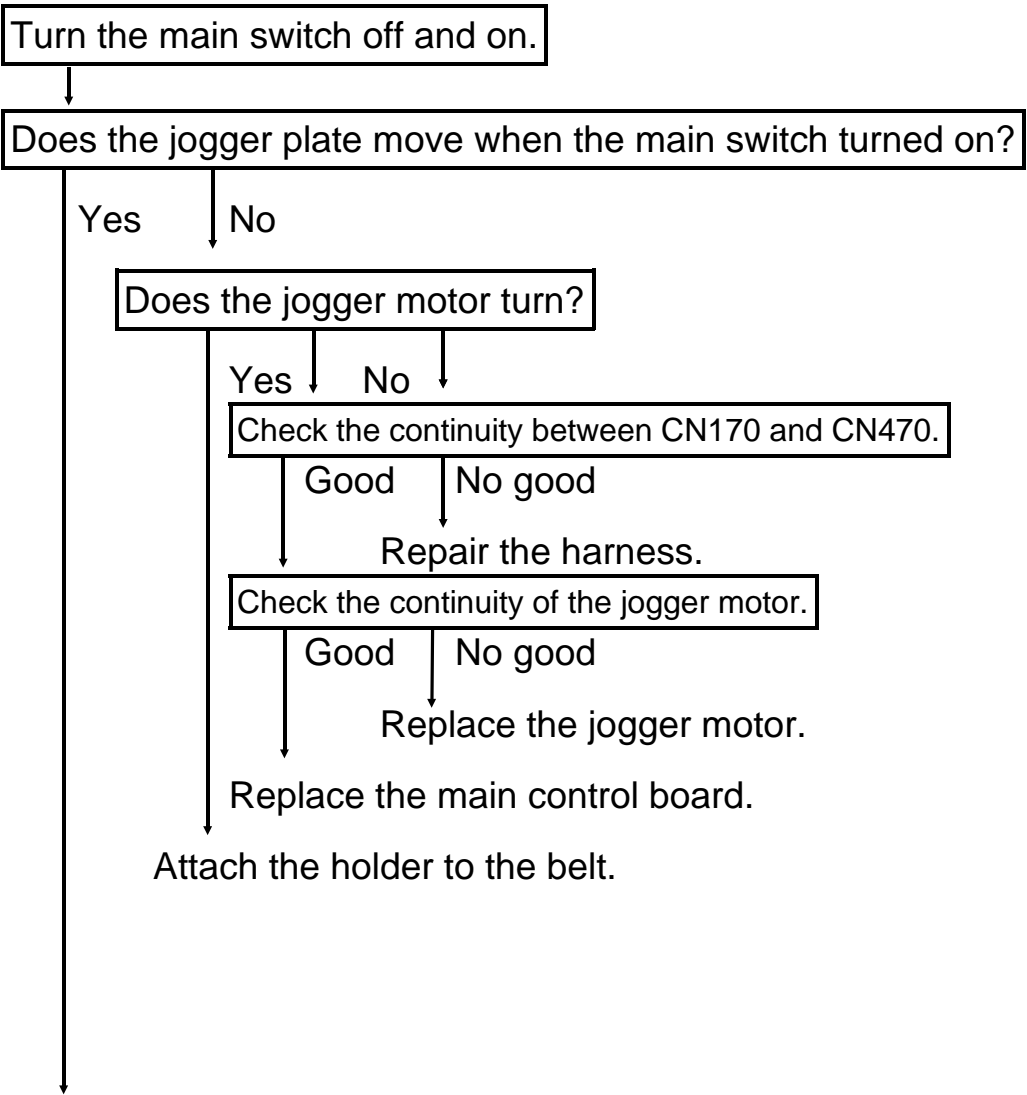
- Definition -

- When the jogger plate moves forward, the home position sensor takes over 150 msec to turn off.
- When the jogger plate moves backward, the home position sensor takes over 1 sec to turn on.

- Possible Causes -

- The jogger H.P. sensor is defective
- The jogger motor is defective
- The main control board is defective
- The timing belt is not fixed

- Action -



Check the jogger H.P. sensor. (between CN190-1 and the ground)

Good



$\geq 4.0\text{ V}$



$\leq 1.0\text{ V}$

No good



$< 4.0\text{ V}$



$> 1.0\text{ V}$

Check the continuity between CN190 and CN475.

Good

No good

Repair the harness.

Replace the jogger H.P. sensor.

Replace the main control board.

8.4 CODE # H4 – STAPLE UNIT POSITION ERROR

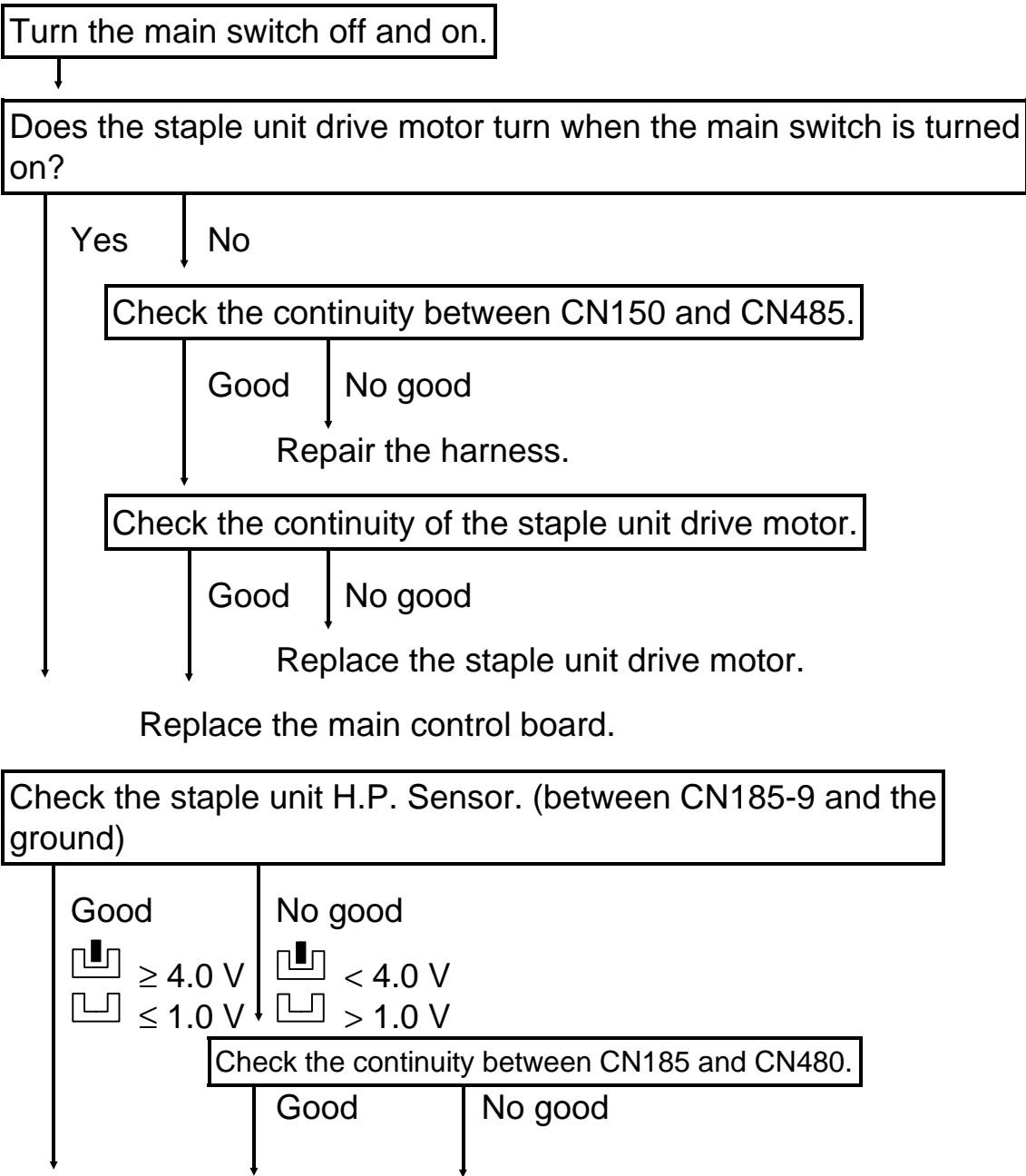
- Definition -

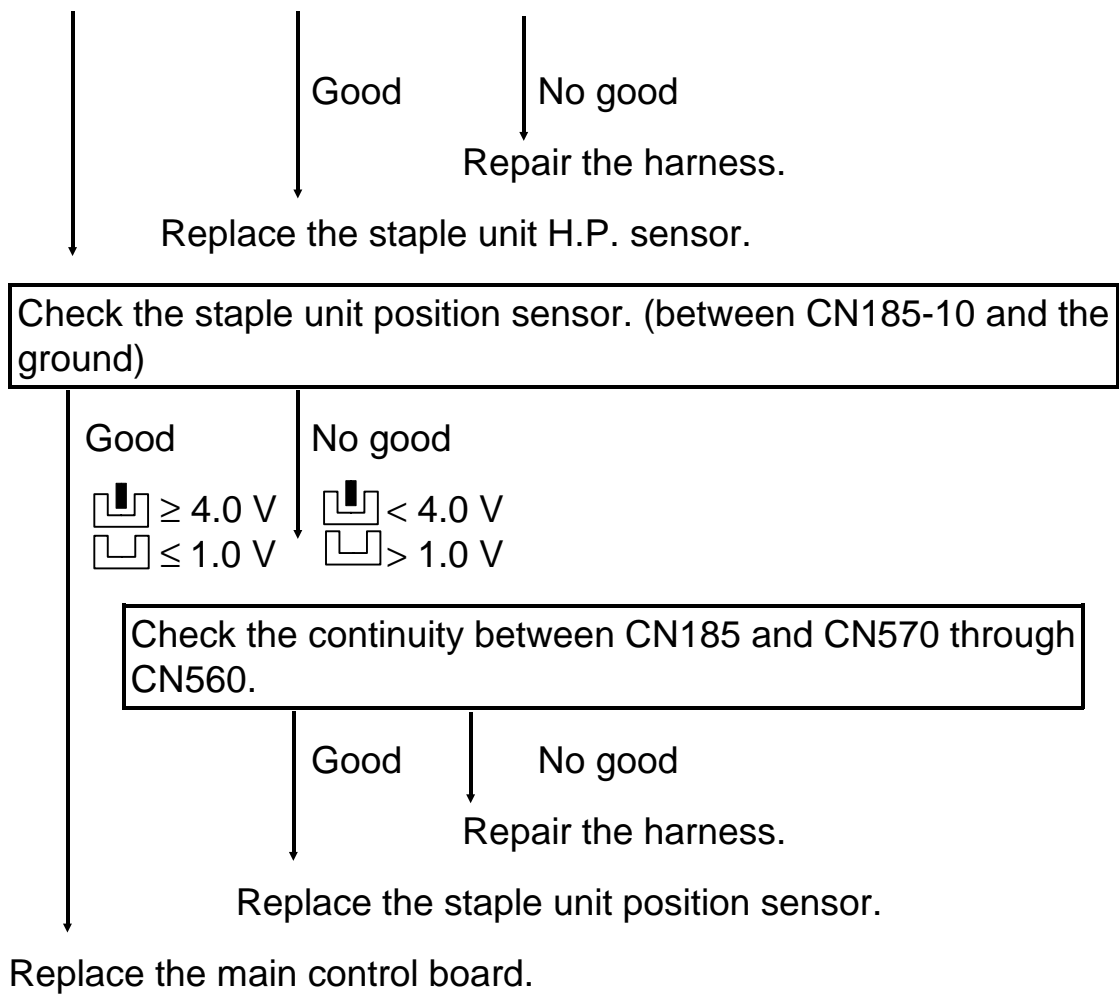
When the staple unit lowers to the next bin, the staple unit position sensor stays on for more than 1 sec or stays off for more than 500 msec.

- Possible Causes -

- The staple unit H.P. sensor is defective
- The staple unit position sensor is defective
- The staple unit drive motor is defective
- The main control board is defective

- Action -





8.5 CODE # H5 – GRIP MOTOR ERROR

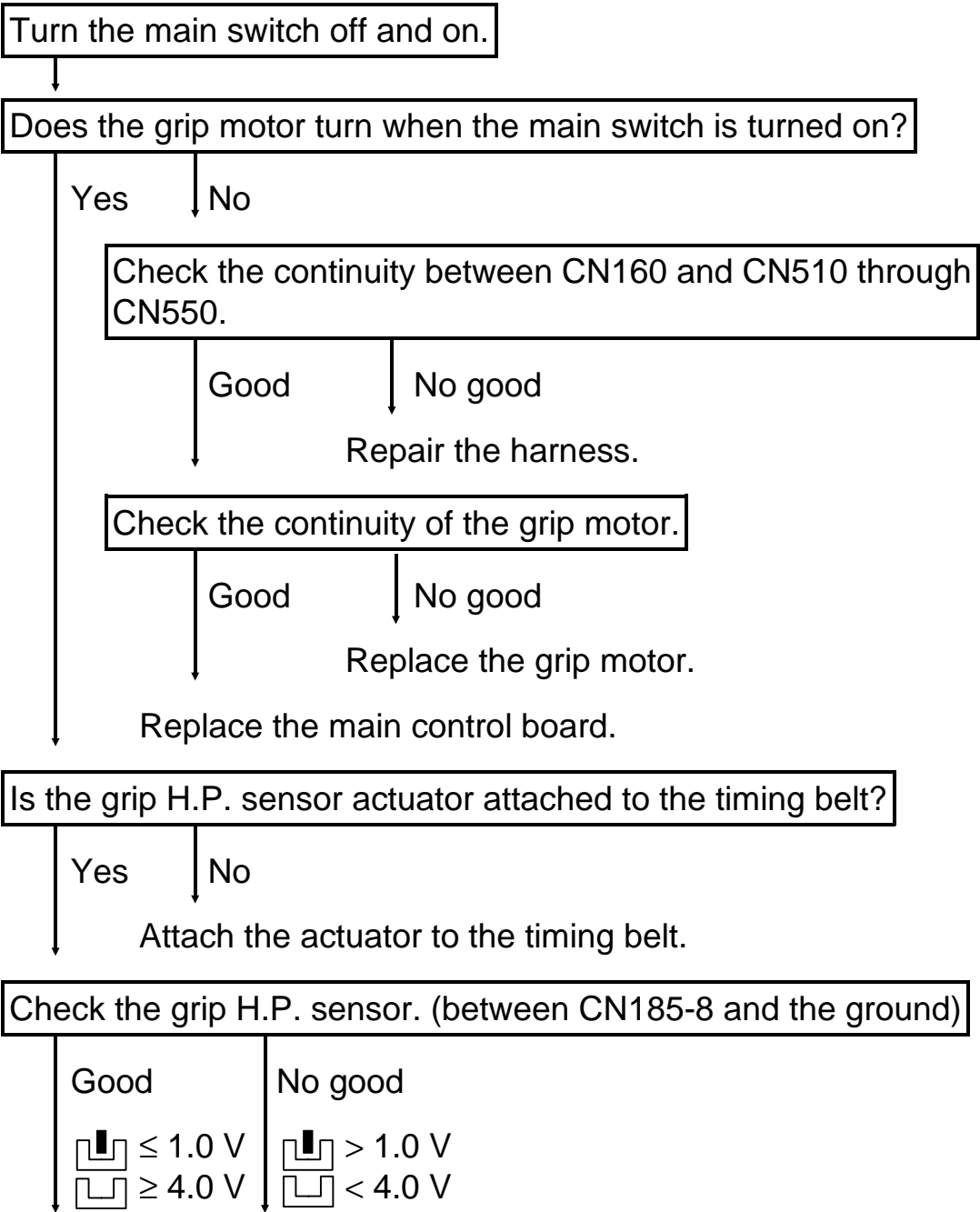
- Definition -

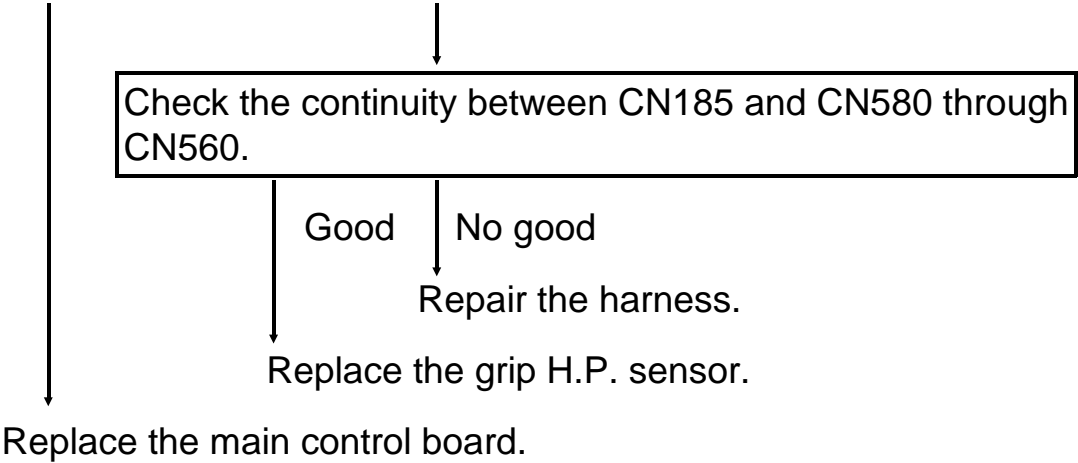
When the grip motor moves forward or backward, the grip H.P. sensor output takes over 250 msec to change.

- Possible Causes -

- The grip H.P. sensor is defective
- The grip motor is defective
- The timing belt is not fixed
- The main control board is defective

- Action -





8.6 CODE # H6 – STAPLE ERROR

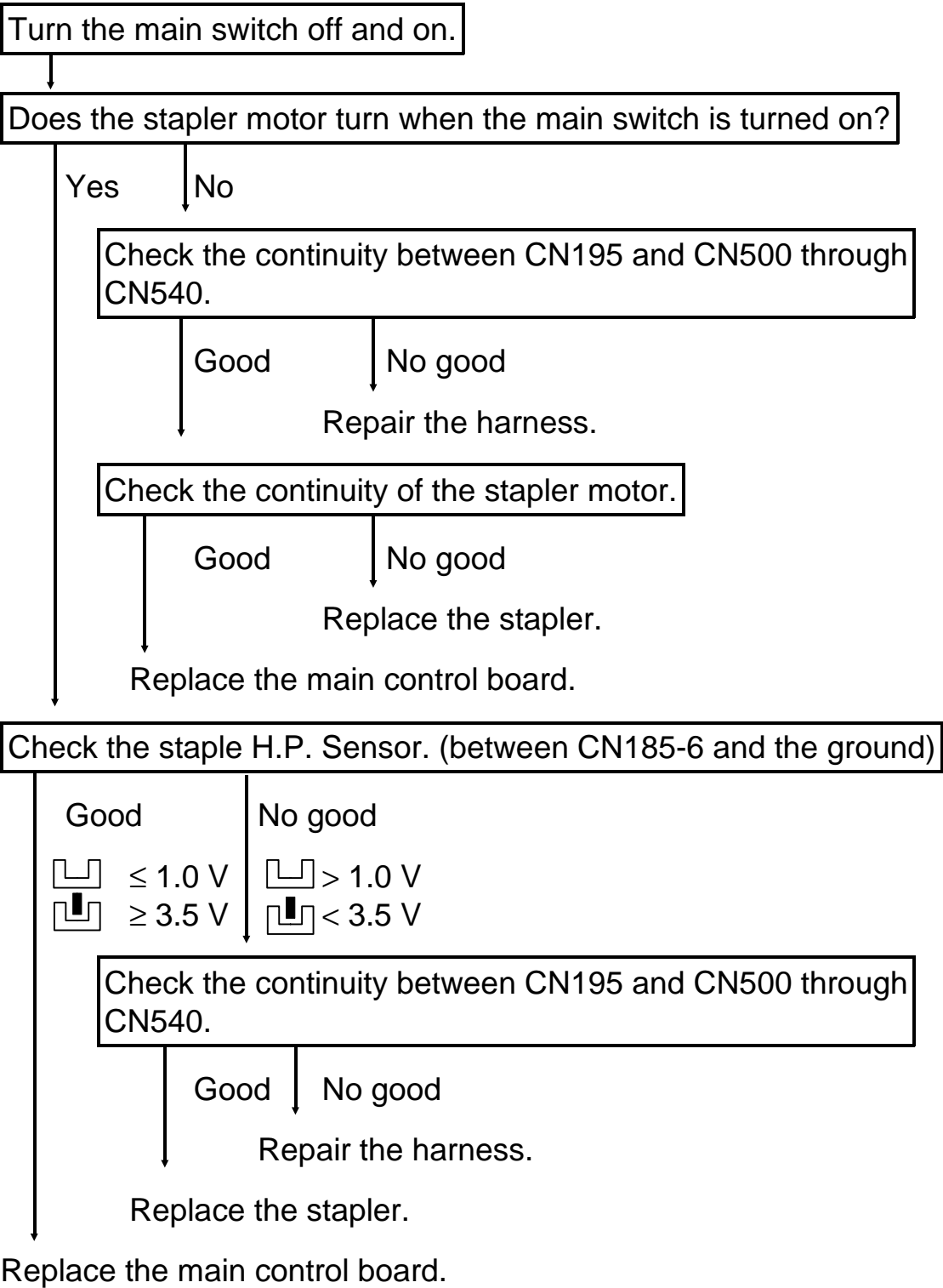
- Definition -

The stapler motor takes more than 800 msec for one staple cycle (from H.P. to H.P.).

- Possible Causes -

- Stapler is defective

- Action -



8.7 CODE # H7 – BIN SIDE PLATE DRIVE MOTOR ERROR

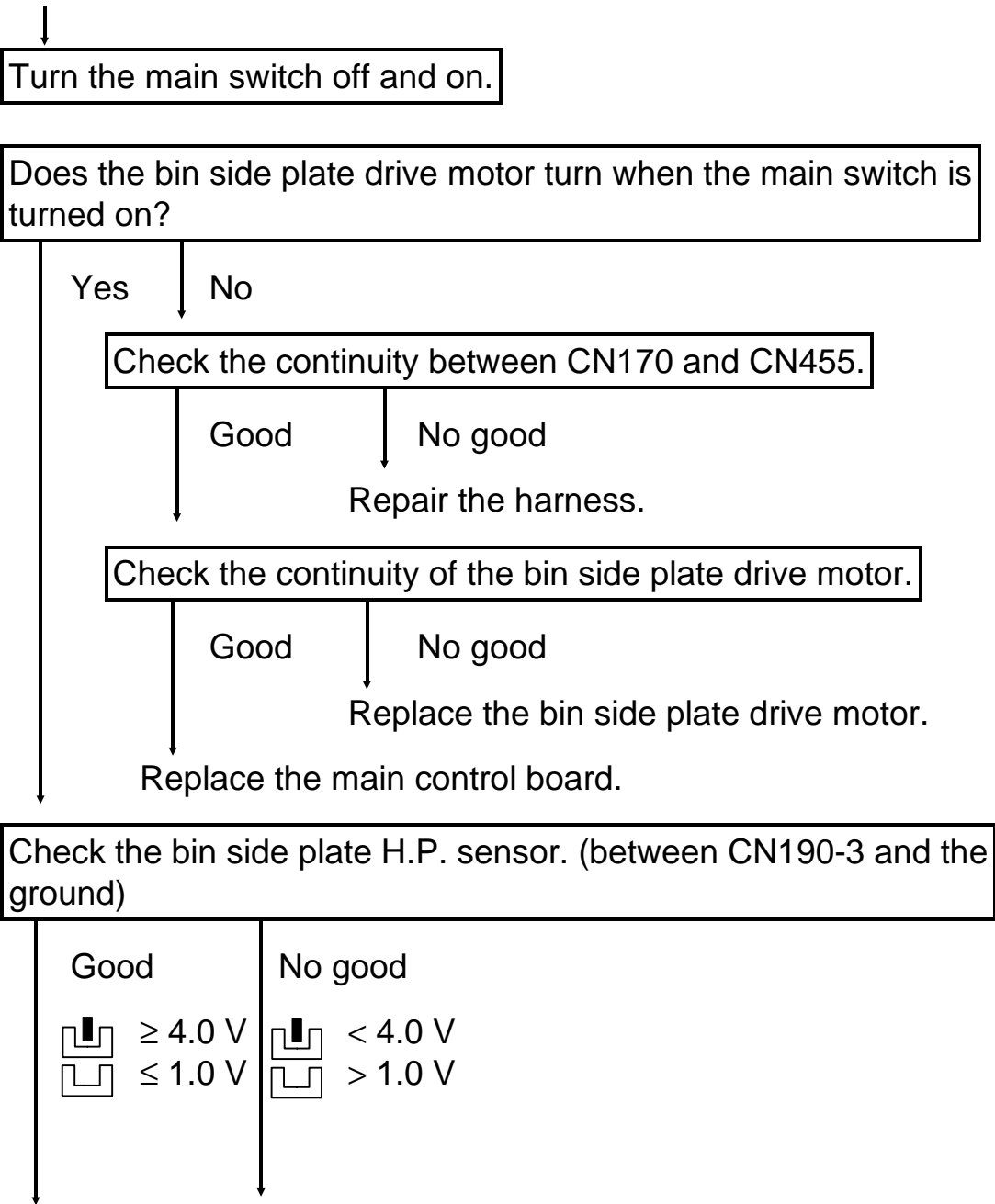
- Definition -

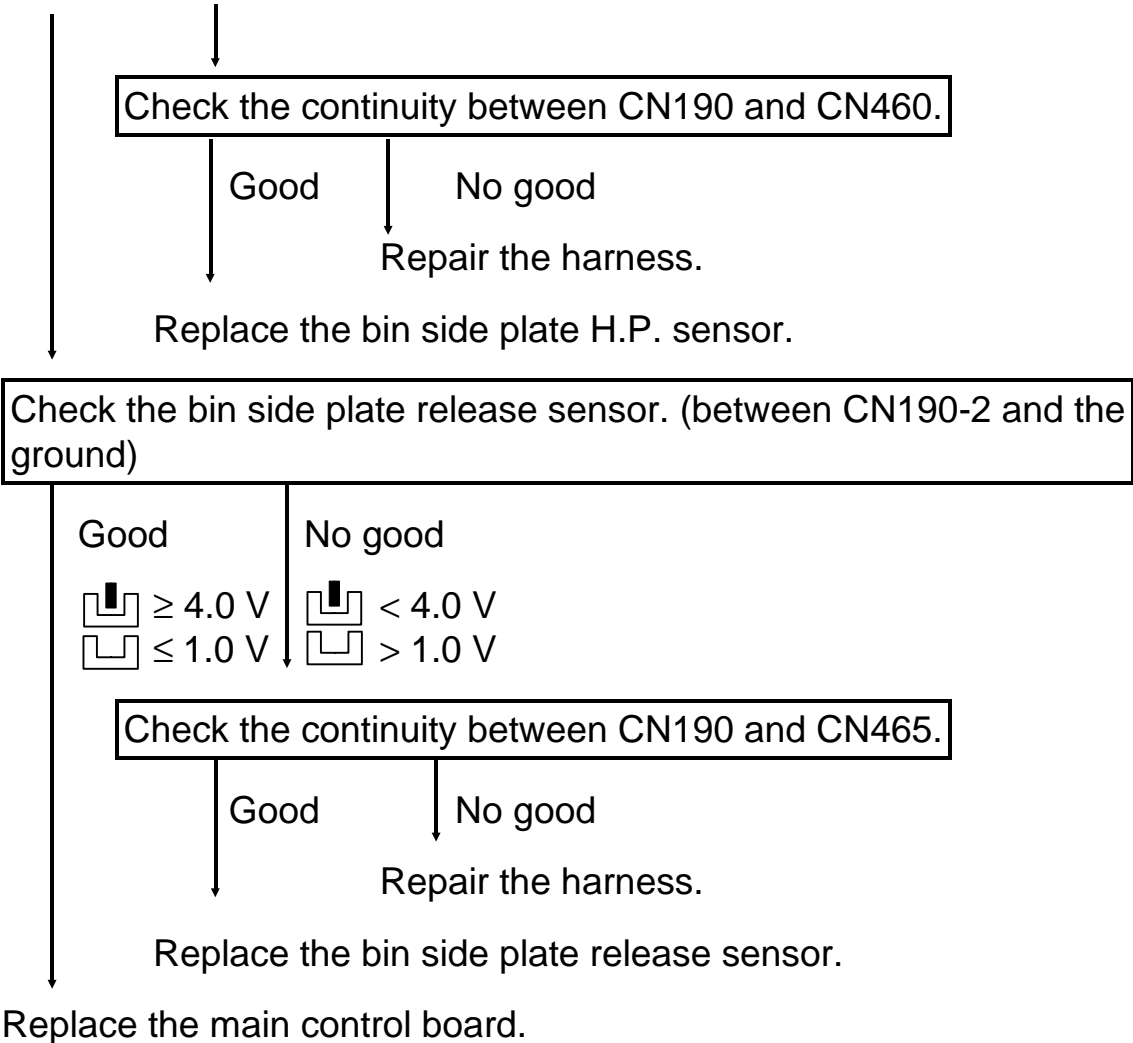
- When the bin side plate opens, the bin side plate drive motor takes more than 1 sec to activate the bin side plate release sensor.
- When the bin side plate closes, the bin side plate drive motor takes more than 1.27 sec to activate the bin side plate H.P. sensor.
- The bin side plate H.P. sensor and release sensor turn on at the same time.

- Possible Causes -

- The bin side plate H.P. sensor is defective
- The bin side plate release sensor is defective
- The bin side plate drive motor is defective
- The main control board is defective







- Action -







 $< 4.0\text{ V}$ $> 1.0\text{ V}$













9. ELECTRICAL COMPONENT DETECTS





9.1 SENSORS

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Exit Sensor (S1)	 ≥ 4.0 V	140-2	open (stays High)	—	"Sorter misfeed" indicator starts blinking, when copies are made in normal mode.
	 ≤1.0 V		shorted (stays Low)	"Sorter misfeed" indicator starts blinking.	
Staple Unit H.P. Sensor (S2)	 ≥ 4.0 V	185-9	open (stays High)	Staple unit goes down and does not return to home position.	After stapling is done, the staple unit does not return to home position.
	 ≤1.0 V		shorted (stays Low)	"Sorter misfeed" indicator starts blinking After the front door is opened/closed, the indicator will turn off. However, "SC code (H4)" will be displayed when staple mode is selected.	"Sorter misfeed" indicator starts blinking, or "SC code (H4)" is displayed when copies are made in staple mode.
Grip H.P. Sensor (S3)	 ≤1.0 V	185-8	open (stays High)	"Sorter misfeed" indicator starts blinking After the front door is opened/closed, the indicator will turn off. However, "SC code (H5)" will be displayed when staple mode is selected.	"Sorter misfeed" indicator starts blinking, or "SC code (H5)" is displayed when copies are made in staple mode.
	 ≥ 4.0 V		shorted (stays Low)	"Sorter misfeed" indicator starts blinking After the front door is opened/closed, the indicator will turn off.	

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Staple Unit Position Sensor (S4)	 $\geq 4.0\text{ V}$	185-10	open (stays High)	—	"Sorter misfeed" indicator starts blinking or "SC code (H4)" is displayed when copies are made in staple mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter misfeed" indicator starts blinking. After the front door is opened/closed, the indicator will turn off However, "SC code (H4)" will be displayed when staple mode is selected.	"Sorter misfeed" indicator starts blinking when copies are made in staple mode.
Bin Transport Sensor (S5)	 $\geq 4.0\text{ V}$	180-5	open (stays High)	--	"Sorter misfeed" indicator starts blinking when copies are made in sort/stack or staple mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter misfeed" indicator starts blinking	"Sorter misfeed" indicator starts blinking when copies are made in sort/stack or staple mode.
Bin Side Plate Release Sensor (S6)	 $\geq 4.0\text{ V}$	190-2	open (stays High)	--	The bin side plate does not release. The stapler operation is performed without any indication on the display.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	--	"Sorter misfeed" indicator starts blinking when copies are made in staple mode.

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Bin Side Plate H.P. Sensor (S7)	 $\geq 4.0\text{ V}$	190-3	open (stays High)	"Sorter misfeed" indicator starts blinking.	"Sorter misfeed" indicator starts blinking when copies are made in staple mode. After the front door is opened/closed, the indicator will turn off. However, "SC code (H7)" will be displayed when staple mode is selected.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Please wait" indicator lights and the bin side plate drive motor turns continuously.	The bin side plate drive motor turns continuously turning when the start key is pressed.
Jogger H.P. Sensor (S8)	 $\geq 4.0\text{ V}$	190-1	open (stays High)	"Sorter misfeed" indicator starts blinking.	"Sorter misfeed" indicator starts blinking when copies are made in sort/stack or staple mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter misfeed" indicator starts blinking. After the front door is opened/closed, the indicator will turn off. However, "SC code (H3)" is displayed when sort/stack or staple mode is selected.	"Sorter misfeed" indicator starts blinking.
Timing Sensor (S9)	 $\geq 4.0\text{ V}$	180-7	open (stays High)	"Sorter misfeed" indicator starts blinking.	"Sorter misfeed" indicator starts blinking or "SC code (H2)" is displayed when copies are made in sort/stack or staple mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)		

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Bin/Jam Sensor - LED (S10)	--	Bin 140-3	open (stays Low)	"Sorter misfeed" location LED starts blinking when sort/stack or staple mode is selected.	"Sorter misfeed" location LED starts blinking when sort/stack or staple mode is selected.
			shorted (stays High)	--	--
		Jam 140-4	open (stays Low)	"Sorter misfeed" indicator starts blinking.	"Sorter misfeed" indicator starts blinking when copies are made in sort/stack or staple mode.
			shorted (stays High)	--	--
Bin/Jam Sensor - Photo Tr. (S11)	 $\geq 4.0 \text{ V}$  $\leq 1.0 \text{ V}$	Bin 180-4	open (stays High)	--	No staple operation even though copying is completed in staple mode.
			shorted (stays Low)	--	"Remove copies from the copy tray" is displayed when sort/stack or staple mode is selected.
		Jam 180-6	open (stays High)	--	"Sorter misfeed" indicator starts blinking when copies are made in sort/stack or staple mode.
			shorted (stays Low)	"Sorter misfeed is displayed.	"Sorter misfeed" indicator starts blinking when copies are made in sort/stack or staple mode.
Paper Sensor (S12)	 $\leq 1.0 \text{ V}$  $\geq 4.0 \text{ V}$	180-5	open (stays High)	--	"Sorter misfeed" indicator starts blinking and no staple operation when copies are made in staple mode.
			shorted (stays Low)		No staple operation even though a set of copies is at the staple position.

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Staple H.P. Sensor (S13)	 ≤ 1.0 V	185-6	open (stays High)	"Sorter misfeed" indicator starts blinking. After the front door is opened/closed, the indicator will turn off. However, "SC code (H6)" will be displayed when staple mode is selected.	"Sorter misfeed" indicator starts blinking or "SC code (H6)" is displayed when copies are made in staple mode.
	 ≥ 3.5 V		shorted (stays Low)	--	
Staple End Sensor (S14)	 ≥3.0 V	185-7	open (stays High)	--	"Add staple" indicator lights even though the staple cartridge is not empty when staple mode is selected.
	 <1.0 V		shorted (stays Low)		"Add staple" indicator does not light even though the staple cartridge is empty when staple mode is selected.

9.2 SWITCHES

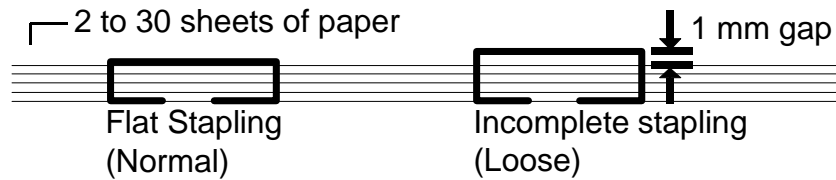
	Component and Condition		Symptom
	Door Safety SW (AC) (SW1)	Door Safety SW (DC) (SW2)	
Main SW OFF→ON	open	open	"C-5" is displayed even though sorter front door is closed.
	open	shorted	"Sorter misfeed" indicator starts blinking although there is no paper in sorter stapler.
	shorted	open	"C-5" is displayed even though sorter front door is closed.
	shorted	shorted	"C-5" is not displayed even though sorter front door is opened.
Ready Condition	open	open	"C-5" is displayed even though sorter front door is closed.
	open	shorted	"Sorter misfeed" indicator starts blinking or "SC code (H2)" is displayed when copies are made in sort/stack or staple mode.
	shorted	open	"C-5" is displayed even though sorter front door is closed.
	shorted	shorted	"C-5" is not displayed even though sorter front door is opened.

10. OTHERS

10.1 IMPROPER STAPLING

- Phenomenon -

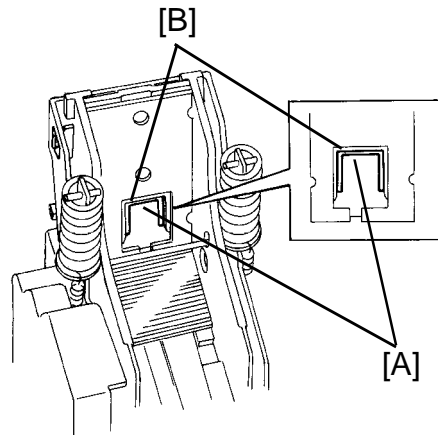
- Incomplete stapling: The staples are not flush with the paper surface.



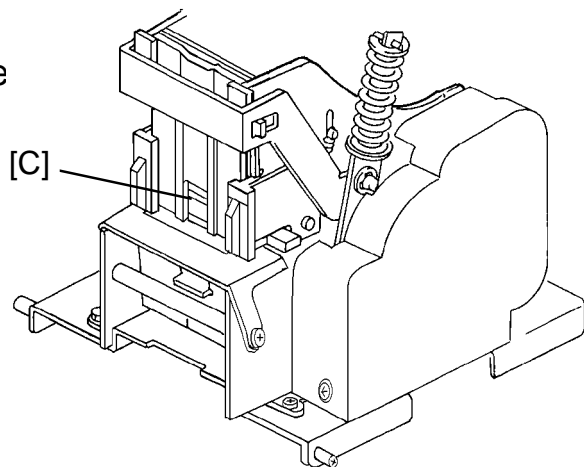
- No stapling: No staples are dispensed from the stapler.

- Possible Causes -

1. If a staple [A] jams inside the staple bending gate [B], the gate cannot close completely. Staples are not crimped completely, and there is about a 1 mm gap between the staple and the paper surface.

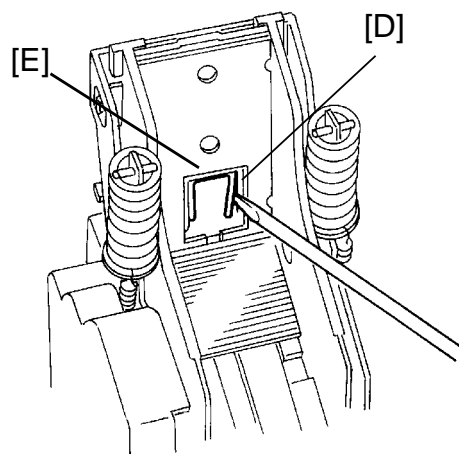


2. A bent staple prevents the staple push plate [C] from moving downward. Another possibility is that the staple sheet has not yet reached the stapling position.

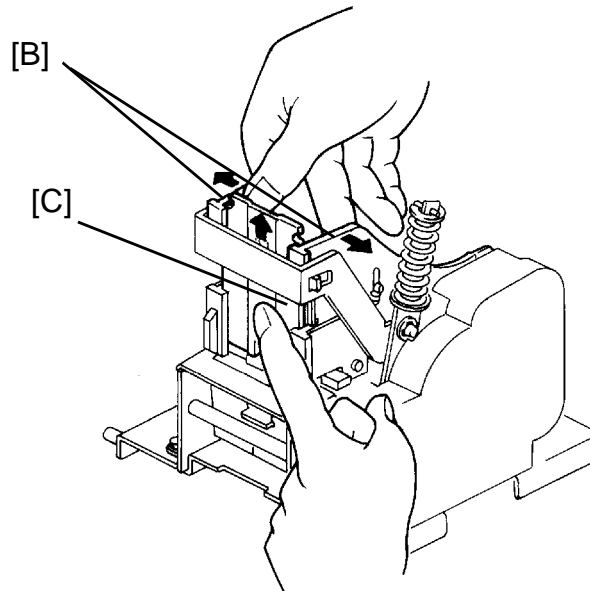
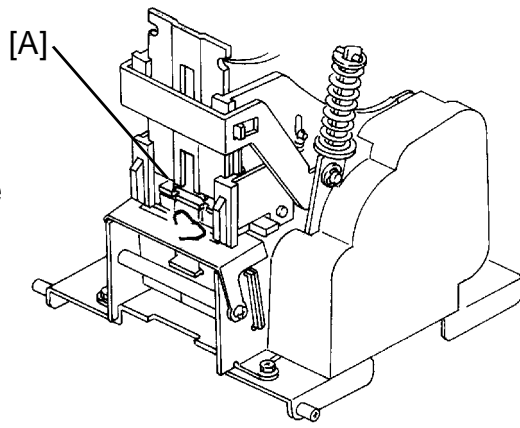


- Action -

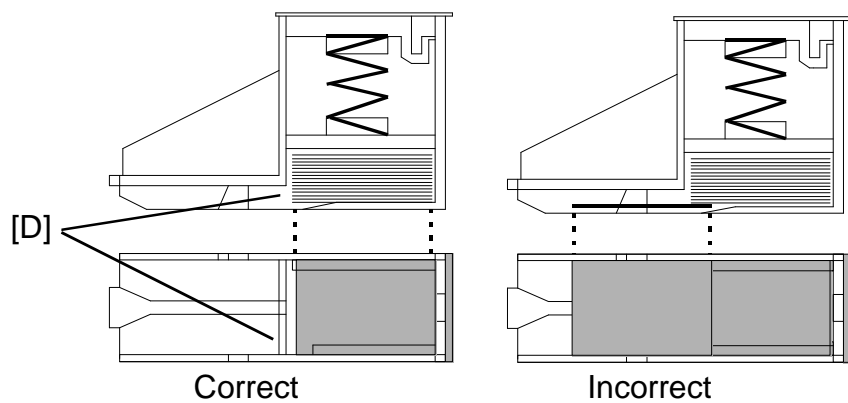
1. Remove the jammed staple [D] from the staple bending gate [E].



2. (1) Remove the staple cartridge, then check for any staples jammed in the stapling mechanism [A]. To remove jammed staples, spread apart the side plates [B] and slide up the front pressure guide plate [C].



NOTE: When installing the staple cartridge, make sure that all the staple sheets [D] are in the initial position.



- (2) Install the staple cartridge, then make copies in staple mode until the staple sheet reaches the stapling position.

SECTION 11

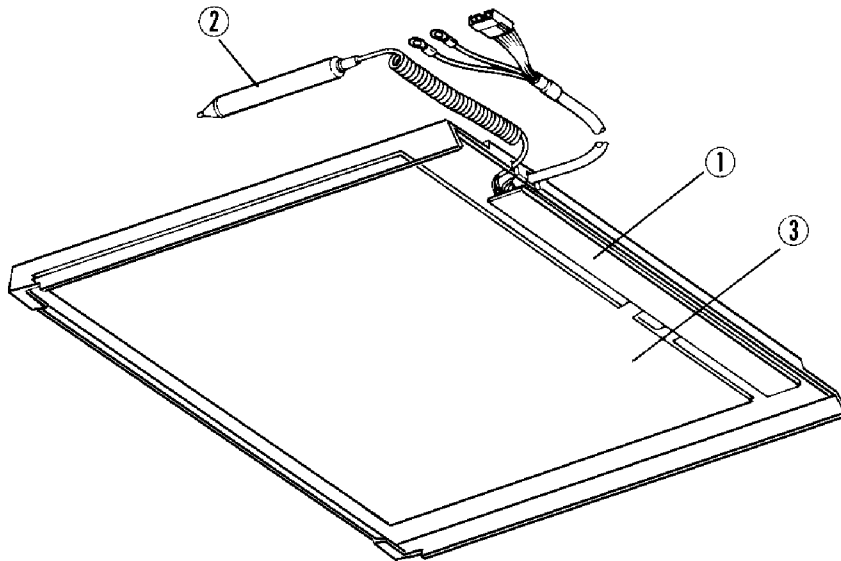
EDITOR

(RE12)

1. SPECIFICATIONS

Maximum Original Size:	LDG
Error Tolerance:	±2.5 mm
Functions:	Delete Area Mode Save Area Mode Erase Center Mode Erase Edge Mode Black in Area Mode Color in Area Mode Highlight Color Mode Centering Mode Size Size Magnification Mode Overlay Mode.
Dimensions: (W x D x H)	20.8" x 18.5" x 2.2"
Weight:	Approximately 5.8 lb (including stylus and cable)
Power Source:	5 V 0.25 A (from copier)
Host Copier:	FT5733

2. ELECTRICAL COMPONENT LAYOUT



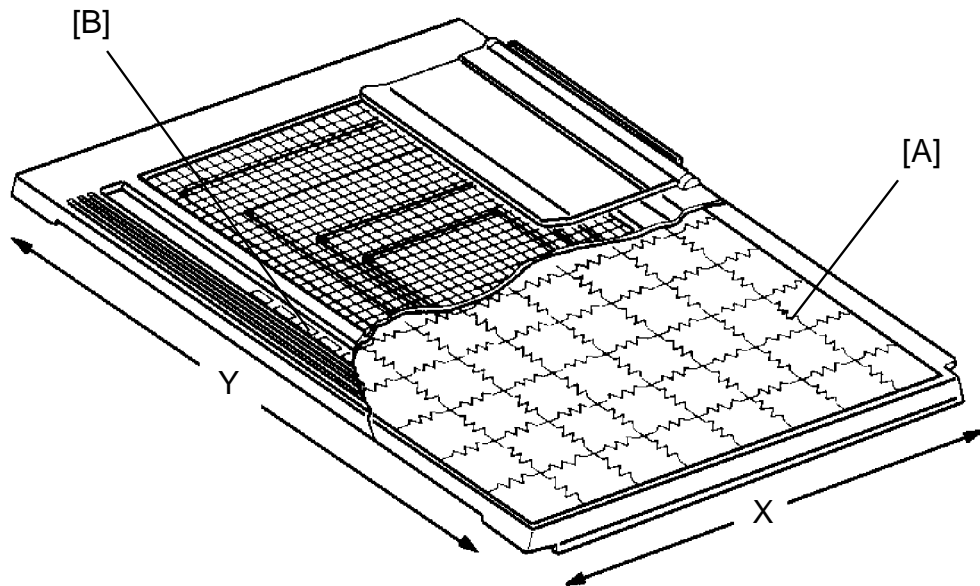
- 1. Main PCB
- 2. Stylus
- 3. Positioning Sheet

3. ELECTRICAL COMPONENT DESCRIPTION

PCBs	
Main	Controls the Editor and drives the positioning sheet

OTHERS	
Positioning Sheet	Detects the stylus position
Stylus	Initializes detection of the position

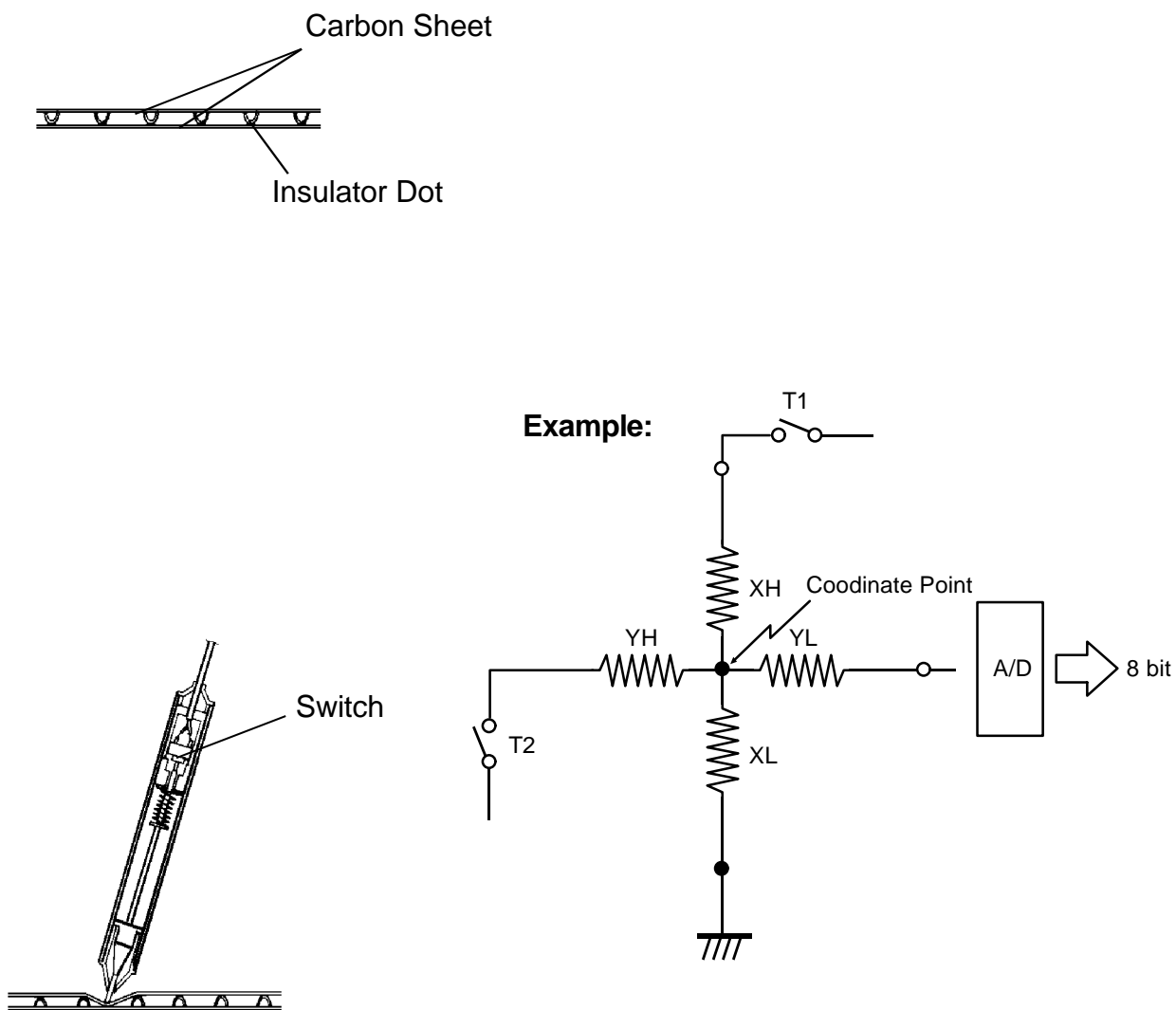
4. BASIC OPERATION



There are resistors [A] (carbon sheets) in the positioning sheet aligned in the X and Y directions. When part of the positioning sheet is pressed with the stylus pen, voltage corresponding to the combination of the resistors is detected.

The detected data is transmitted to the copier as the coordinate position. This detection method also applies to the mode selection pads [B].

5. DETECTING METHOD



The positioning sheets consists of two carbon sheets for X and Y direction, and insulator dots located in-between the two carbon sheets.

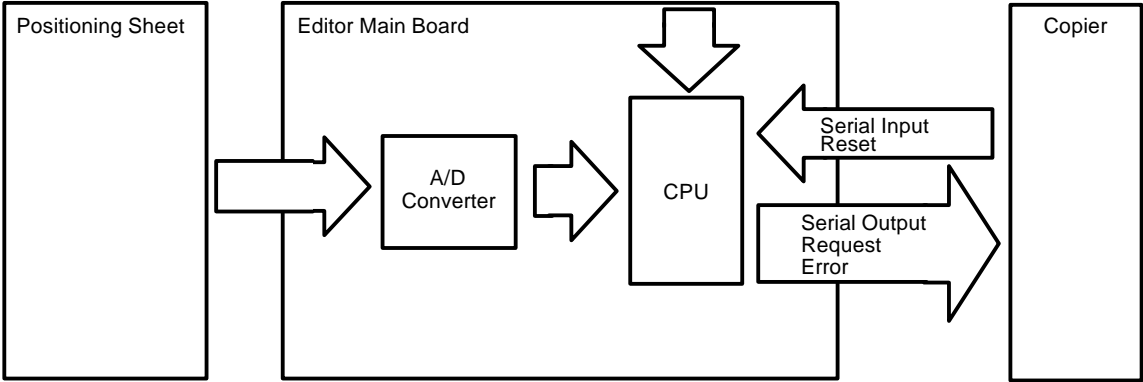
When the positoning sheet is pressed with the stylus pen, the switch in the stylus pen turns on and starts the detection of the coordinate point. Also, the upper carbon sheet contacts the lower carbon sheet at the coordinate point. Therefore, the voltage corresponding to the coordinate point is sent to the A/D converter.

Coordinate Point in X Direction:

The voltage of the coordinate point in the X direction is sent to the A/D converter through the Y line as the switching transistor T1 is turned ON and the voltage is applied to the X line. At this time, the switching transistor T2 should be OFF.

Coordinate Point in Y Direction:

By changing the ON/OFF position of the switching transistors T1 and T2, the voltage of the coordinate point in the Y direction is sent to the A/D converter through the X line.



The copier supplies +5 volts to the editor. The signals between the editor and the copier are as follows:

CN No.	Signal	Name Function
1	GND	—
2	Serial Input: TXD (Copier to Editor)	Status signal of copier
3	GND	—
4	Serial Output: RXD (Editor to Copier)	Coordinate data and mode selection data from editor.
5	Request (Editor to Copier)	Request to receive data (Serial Input Signal) from copier.
6	Error (Editor to Copier)	Request to receive data (Serial Input Signal) again from copier when Serial Input Signal is in error condition.
7	Reset (Copier to Editor)	Resets the editor
8	Editor Connection	Connects to GND on Editor board
9/10	+5 V	—

6. ERROR DETECTION

6.1 INITIAL ERROR

Short circuit and disconnection of the resistors in the positioning sheet is checked when the power is turned ON. If an error is found and coordinate data input is made with the stylus pen, the buzzer sounds for five seconds and the coordinate position at that time is not transmitted to the copier.

6.2 PARITY ERROR (Communication Error)

When data transmitted from the editor or copier has an error, the service call "SC94" is lit on the copier control panel.

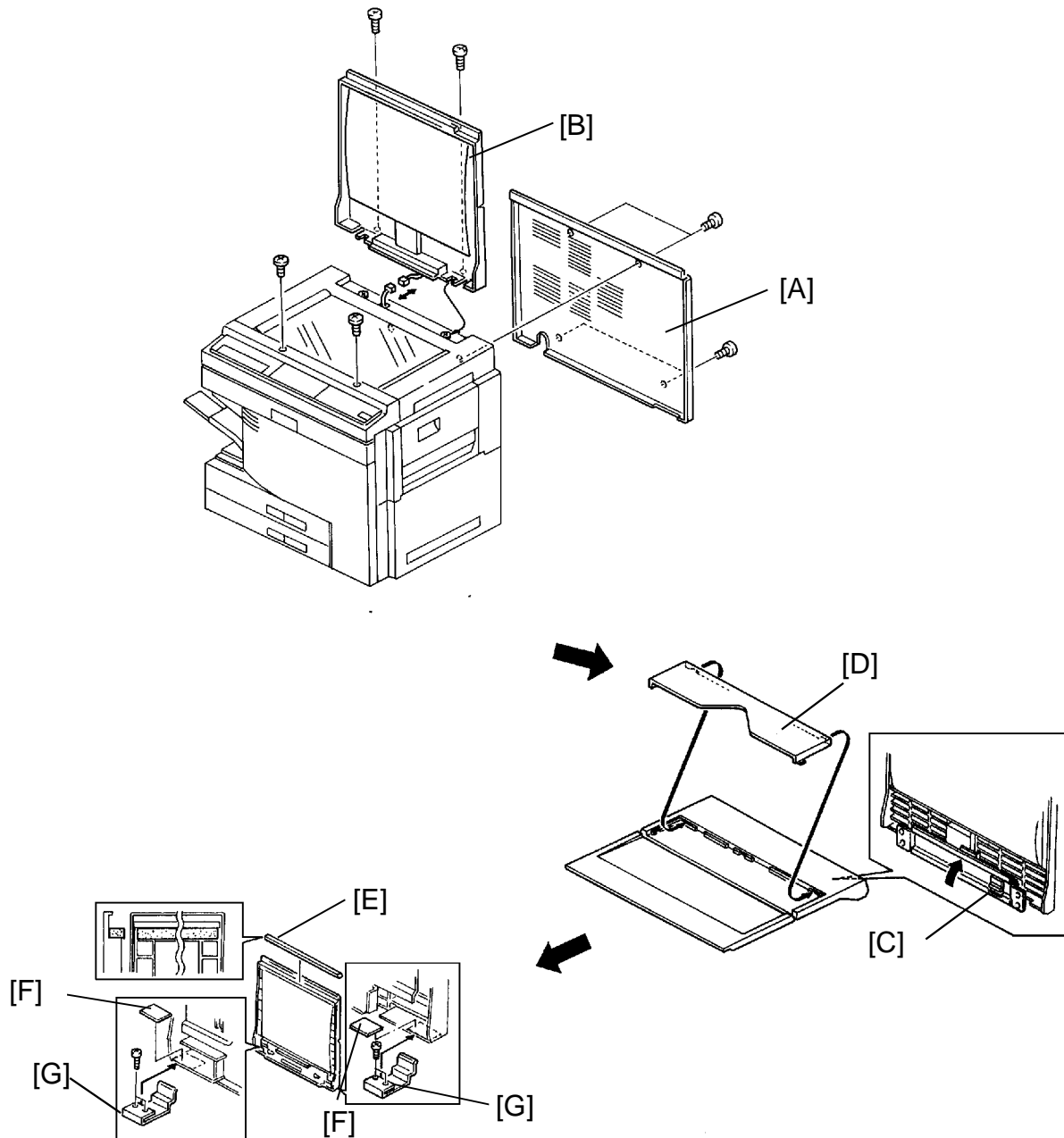
7. INSTALLATION

7.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

- 1. Installation Procedure
(115 V - English only/220 V - Five Languages) 1
- 2. New Equipment Condition Report 1
- 3. Envelope for NECR (115 V only) 1
- 4. Grounding Screw 1
- 5. Protective Plate 2
- 6. Front Stopper 2
- 7. Rear Stopper 2
- 8. Sponge Plate 1
- 9. Harness Clamp 1
- 10. Tie Wrap 2
- 11. Pan Head Screw - M4 x 8 1
- 12. Pan Head Screw - M4 x 6 4
- 13. Truss Screw - M4 x 8 2
- 14. Operating Instructions 1
- 15. Multilingual Decals (220/240 V only) 1

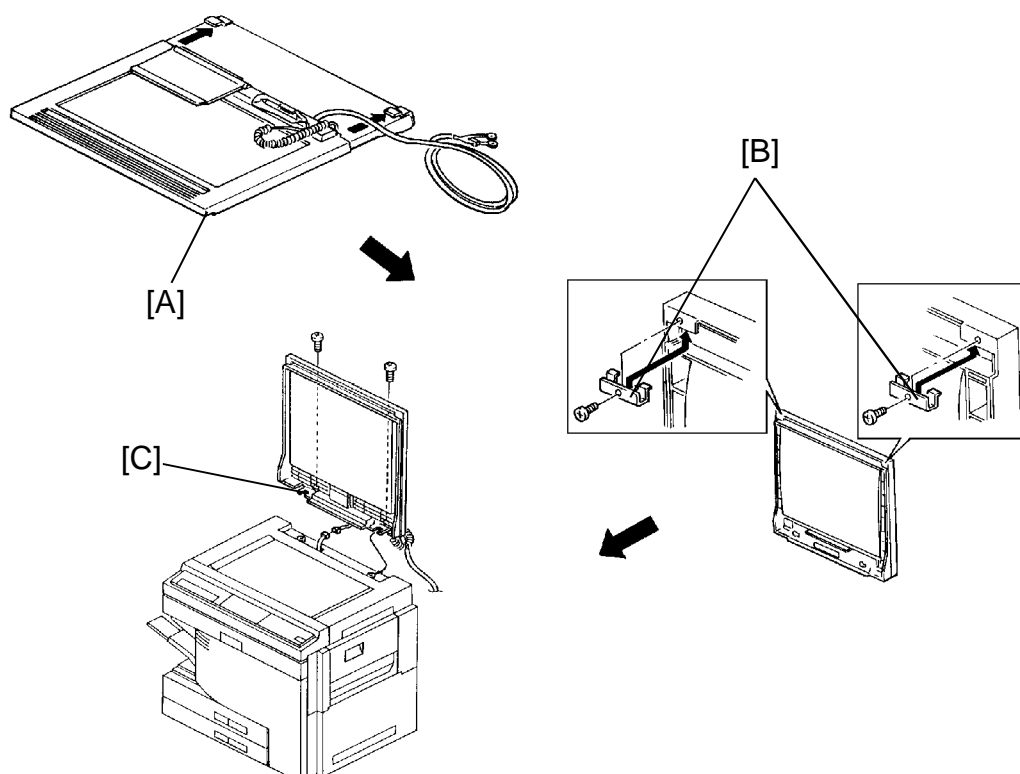
7.2 INSTALLATION PROCEDURE



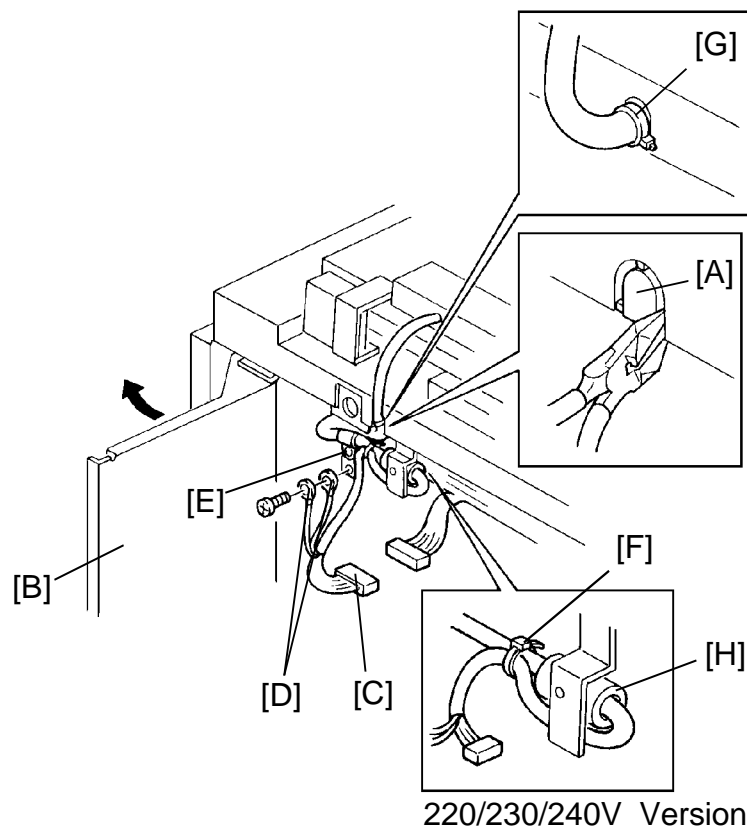
CAUTION: Before installing the editor, make sure that the copier is unplugged.

NOTE: The editing interface adapter (A345) is required to install this editor on the copier.

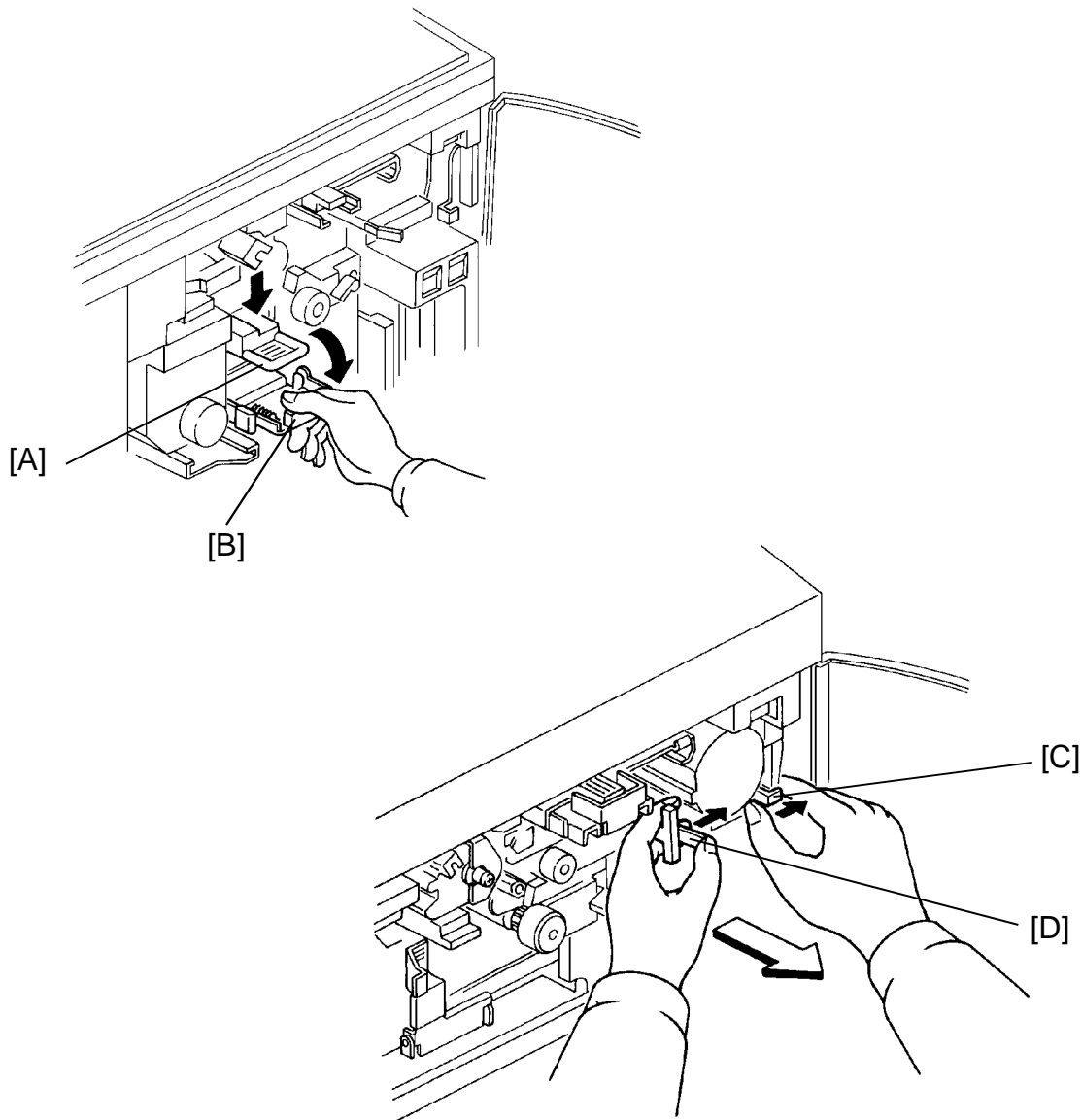
1. Remove the strips of shipping tape.
2. Remove the rear cover [A] (remove 2 screws and loosen 2 screws).
3. Remove the platen cover [B] (2 screws, 1 connector).
4. Close the hinge [C] of the platen cover and remove the original holder [D] from the platen cover.
5. Stick the sponge plate [E] and the protective plates [F] as shown.
6. Install the rear stoppers [G] to the right and left sides of the platen cover as shown (2 screws each: M4 x 6).



7. Place the editor [A] on the platen cover from the operation side as shown and secure the right and left ends of the editor with the front stoppers [B] (1 screw each: M4 x 6).
8. Open the hinge [C] and reinstall the platen cover (with editor) on the copier.



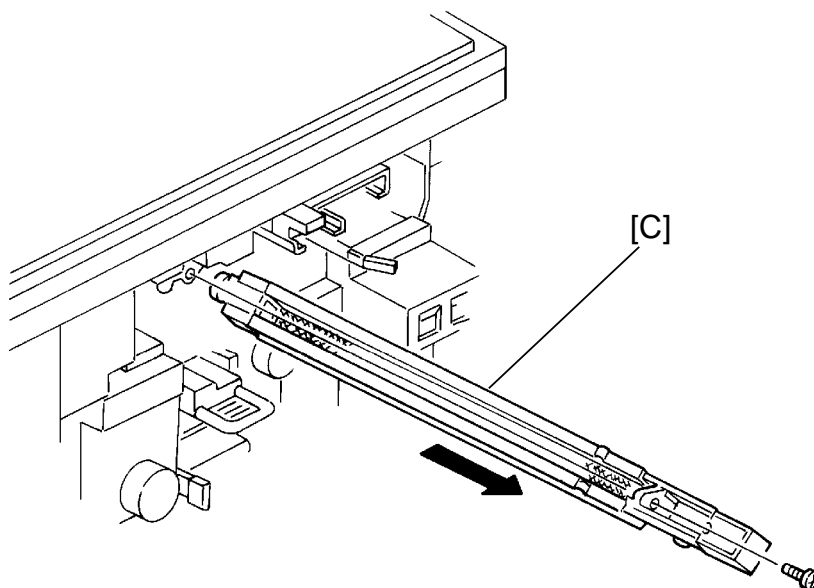
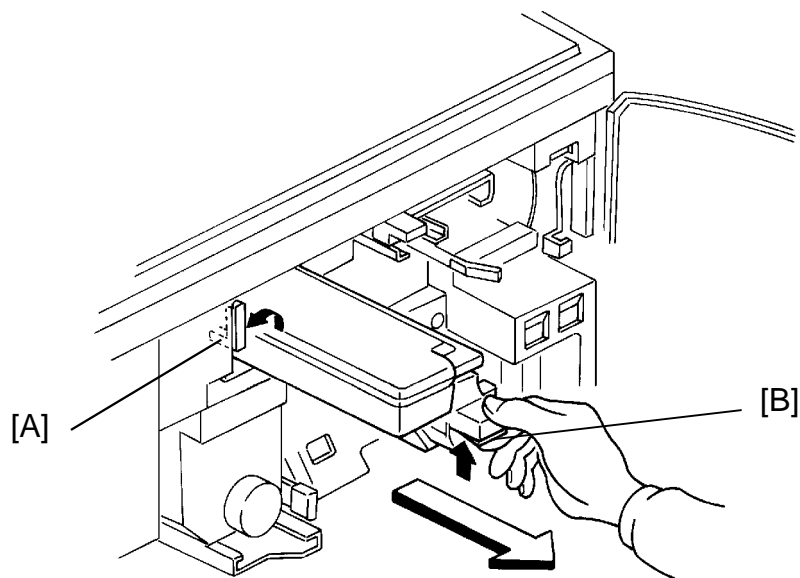
9. Remove the cover plate [A] using cutting pliers.
 10. Swing out the main control board assembly [B] (1 screw).
 11. Connect the editor harness connector [C] (10P white) with the copier as shown.
 12. Secure the grounding and protective earth wires [D] together (1 grounding screw) as shown.
 13. Secure the editor harness with the harness clamp [E] (1 screw: M4 x 8), and the tie wrap [F].
Put the tie wrap [G] on the editor harness as close to the cut out as possible.
- NOTE:** For 220/230/240 V version:
Place the editor harness as shown because it has a core [H].
14. Reinstall the main control board.



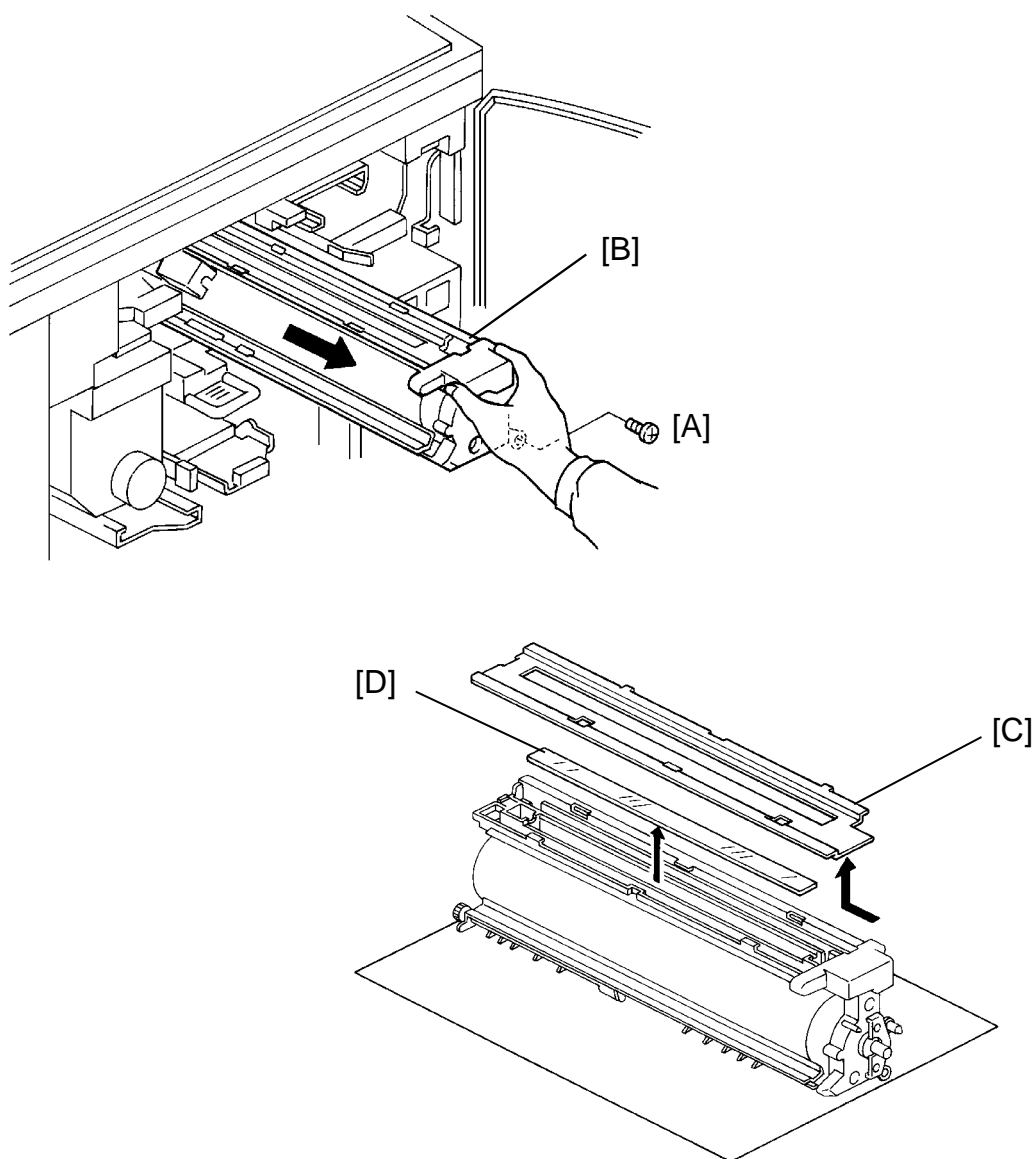
15. Reinstall the copier rear cover.

NOTE: for the machine code A074-26 skip to step 31.

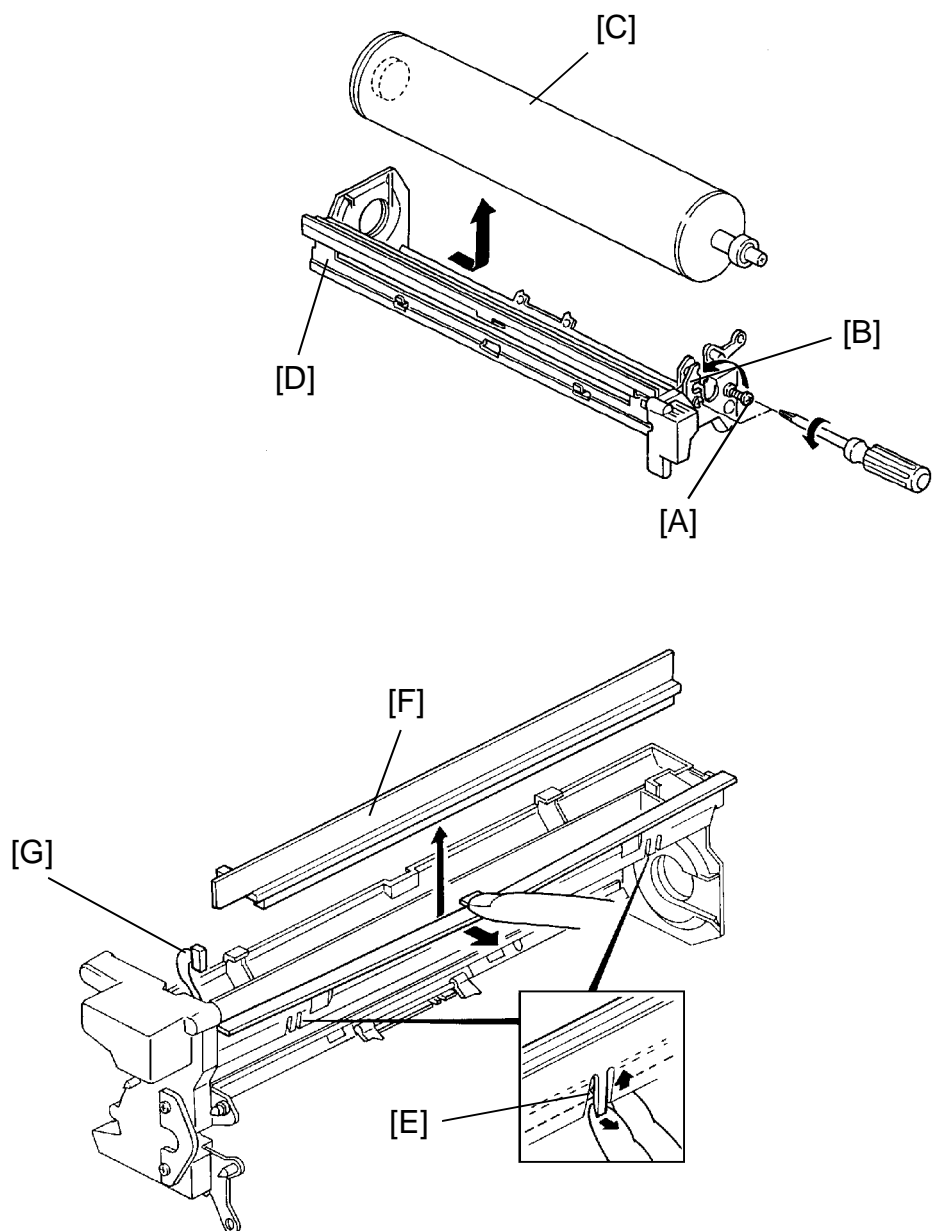
16. Open the front door and lower the transfer & separation corona unit [A] by pulling down the release lever [B].
17. Push the development unit lock lever [C] to the right (to the lock position).
18. Move the development release lever [D] to the right and pull the black development unit half way out. Holding the toner supply unit with your right hand and the bottom of the development unit with your left hand, pull the unit all the way out. Place the unit on a clean sheet of paper.



19. Turn the cleaning unit release lever [A] counterclockwise. While holding up the cleaning blade release lever [B], remove the cleaning unit. Place the unit on a clean sheet of paper.
20. Remove the charge corona unit [C] together with the wire cleaner (1 screw).



21. Remove the fixing screw [A] securing the drum stay and pull out the drum unit [B] gently along the rail.
22. Place the drum unit on a clean sheet of paper.
23. Slide the drum unit top plate [C] to the rear and remove it. Then remove the toner shield glass [D].



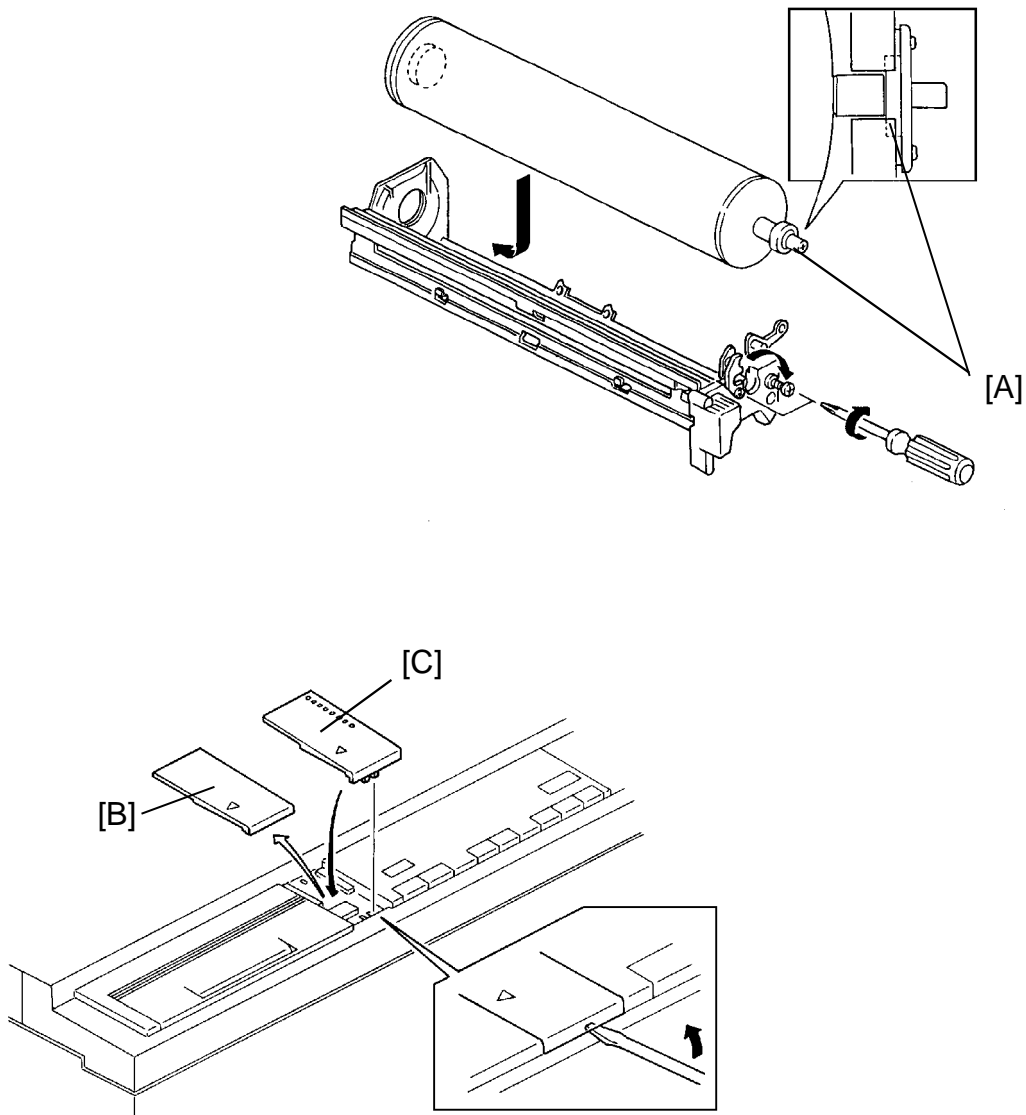
24. Loosen the two screws [A] securing the bearing holder [B] and rotate the holder as shown.
25. Remove the drum [C] by holding the drum unit rail [D] and pulling out and up on the drum knob.

NOTE: a) When removing the drum, take care not to strike it against any objects.

b) Be careful not to bend the bearing holder.

c) Do not touch the drum surface.

d) Wrap the drum in clean sheets of paper to protect it.
26. While unhooking the positioning pawls [E], remove the erase lamp unit [F] (1 connector) as shown.
27. Install the edit erase lamp unit (editing interface adapter: A345) instead of the original erase lamp unit and set the harness [G] in position.



28. Set the drum in the unit and put the bearing holder back in place. Tighten the screws, then unwrap the drum.

NOTE: a) When setting the drum in the unit, be careful not to strike it against the rail.

b) Do not bend the bearing holder. Make sure the bearing holder is in contact with the bearing [A], as they are both used to ground the unit. If they are not in contact, solid black copies may occur.

c) Do not touch the drum surface.

29. Reassemble the machine.

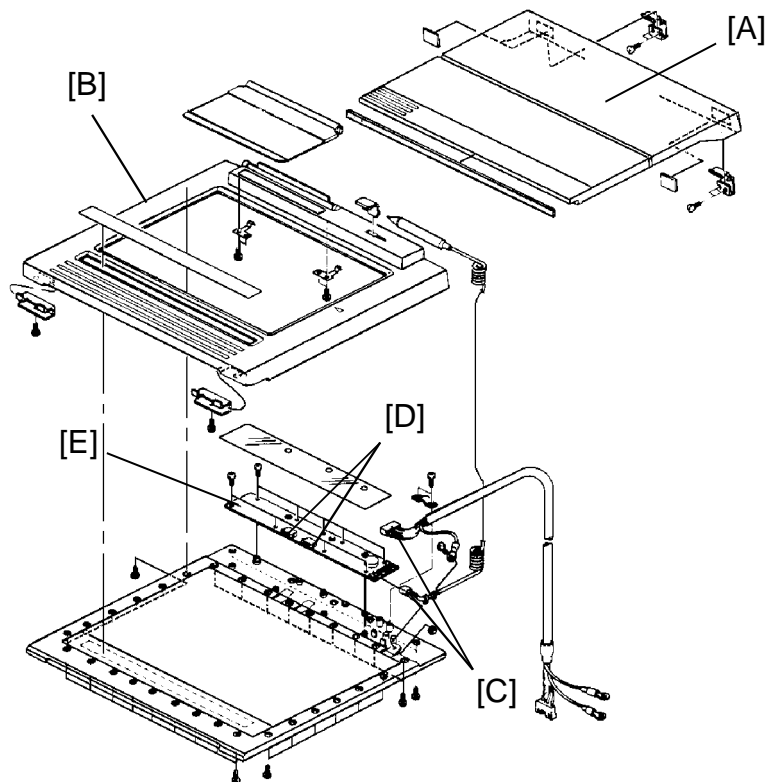
30. Remove the center cover plate [B] on the operation panel and install the edit cover [C] instead. (The edit cover is provided together with the editing interface adapter.)

31. Plug in the power cord and turn the main switch on.

32. Check the editor operation.

8. REPLACEMENT AND ADJUSTMENT

8.1 MAIN PCB REPLACEMENT



CAUTION: Do not touch the DIP switch on the main PCB as it is factory preset.

1. Disconnect the editor connectors.
2. Remove the editor from the platen cover [A] (6 screws).
3. Remove the upper cover [B] (35 screws).

NOTE: Carefully remove the upper cover as it is held down with double sided tape.

4. Remove the connectors [C].
5. Remove the connector [D] and replace the main PCB [E] (9 screws).

SECTION 12
MENU READER
(MR20)

1. SPECIFICATIONS

- Item -	- Specification -
Job Sheet	
1. Material:	Paper
2. Size:	2.6" x 5.9"
3. Weight:	22 lbs to 43 lbs
4. Markers:	Black pencil, HB or higher (HB, B, 2B, etc.) Marker (Black) Ball-point pen (Black)
Job Sheet Feed Method:	Fed in and out automatically
Reading Time:	Approximately 2.5 seconds
Power Source:	+24 volts and +5 volts (from copier)
Dimensions: (W x D x H)	4.4" x 6.5" x 1.8"
Weight:	170 lbs

2. DATA FORMAT

Menu Reader → Copier

b7	b6	b5	b4	b3	b2	b1	b0	DATA CONTENTS
B C D				0	0	0	0	Copy Quantity x 1
B C D				0	0	0	1	Copy Quantity x 10
B C D				0	0	1	0	Copy Quantity x 100
Size 4	Size 3	Size 2	Size 1	0	0	1	1	Paper Size
Enlarge 3	Enlarge 2	Enlarge 1	100%	0	1	0	0	Reproduction Ratio-1
Reduce 4	Reduce 3	Reduce 2	Reduce 1	0	1	0	1	Reproduction Ratio-2
0	2 : 1	2 : 2	1 : 2	0	1	1	0	Duplex
0	0	Stack	Sort	0	1	1	1	Sorter
0	0	0	Staple	1	0	0	0	Staple
0	0	0	Reserve -1	1	0	0	1	Reserve-1
0	Reserve 2-2	Reserve 2-2	Reserve 2-1	1	0	1	0	Reserve-2
0	0	0	Reserve -3	1	0	1	1	Reserve-3
0	0	0	Reserve -4	1	1	0	0	Reserve-4
-----	-----	-----	-----	1	1	0	1	
-----	-----	-----	-----	1	1	1	0	
				1	1	1	1	Control Data

Copier → Menu Reader

b7	b6	b5	b4	b3	b2	b1	b0	DATA CONTENTS
-----	-----	-----	-----	0	0	0	0	Insert Sheet OK/NG
-----	-----	-----	-----	0	0	0	1	
.
.
.
-----	-----	-----	-----	1	1	1	0	
1	1	1	1	1	1	1	1	Send OK

The contents of the reserve bytes are different in each market.

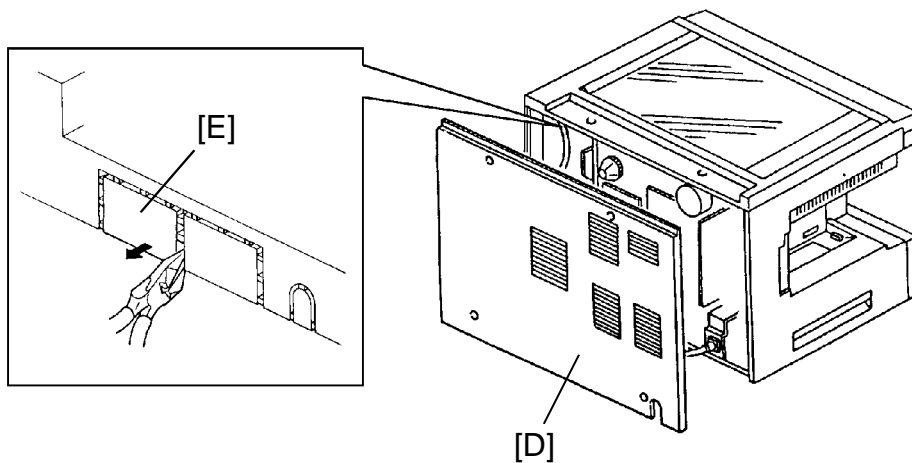
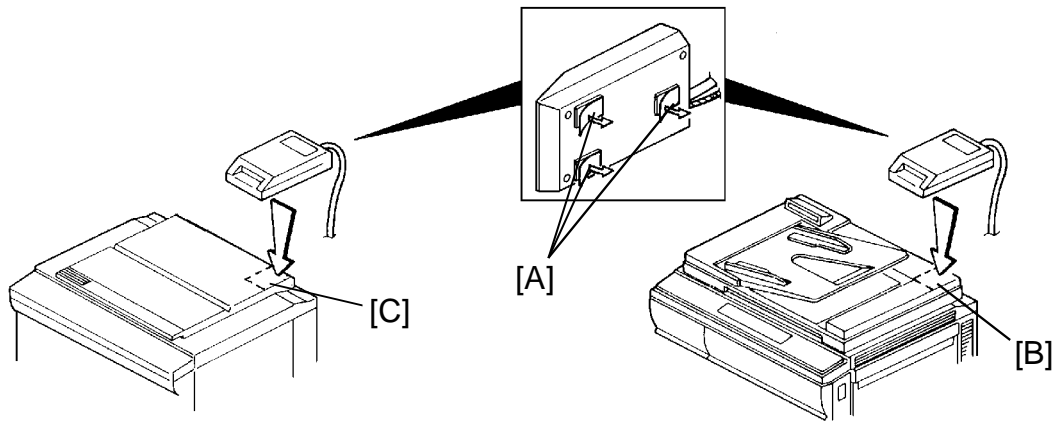
3. INSTALLATION

3.1 ACCESSORY CHECK

Check the quantity and condition of the accessories in the box according to the following list:

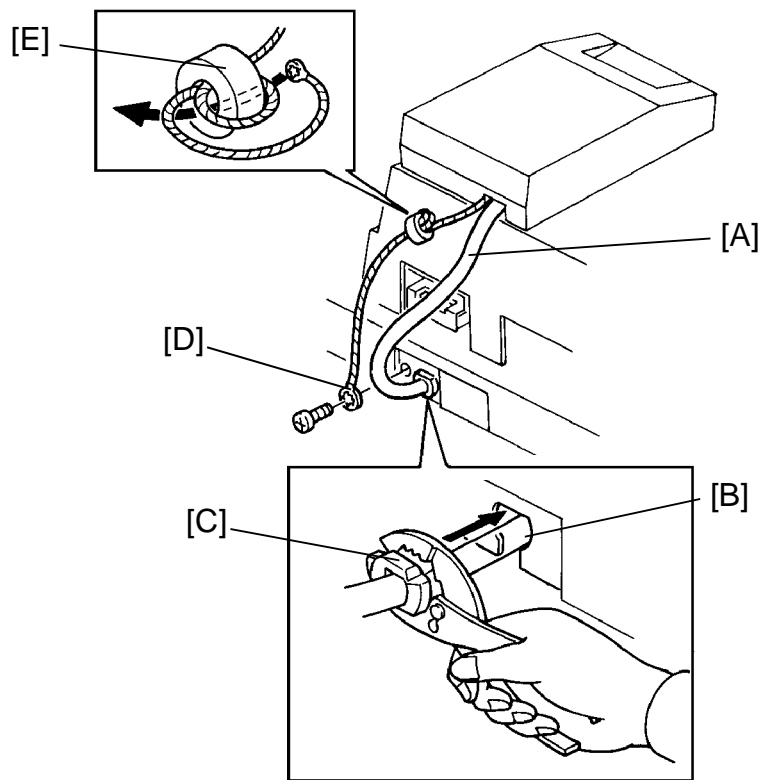
- 1. Cord Stopper 1
- 2. Ferrite Core 1
- 3. Coil..... 1
- 4. Grounding Screw..... 1
- 5. Decal Sheet..... 1
- 6. Tie Wrap 1
- 7. Installation Procedure..... 1
- 8. New Equipment Condition Report
 (--17, --27 only)
- 9. Envelope for NECR (--17 only) 1

3.2 INSTALLATION PROCEDURE

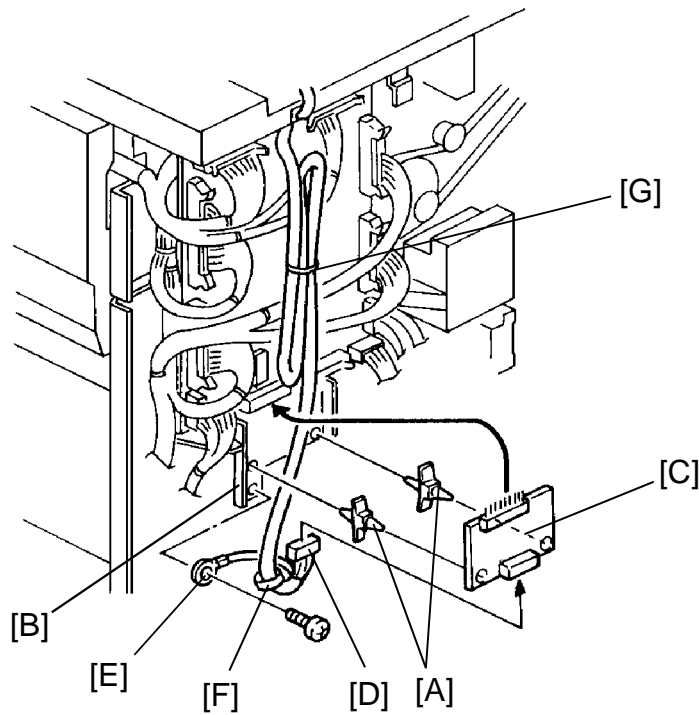


CAUTION: Before installing the menu reader, make sure that the copier is unplugged.

1. Peel the backing off the strips of double-sided adhesive tape [A] and stick the menu reader on the ARDF [B] or platen cover [C] as shown.
2. Remove the copier rear cover [D] (remove 2 screws and loosen 2 screws).
3. Remove the cover plate [E] from the top cover using cutting pliers.



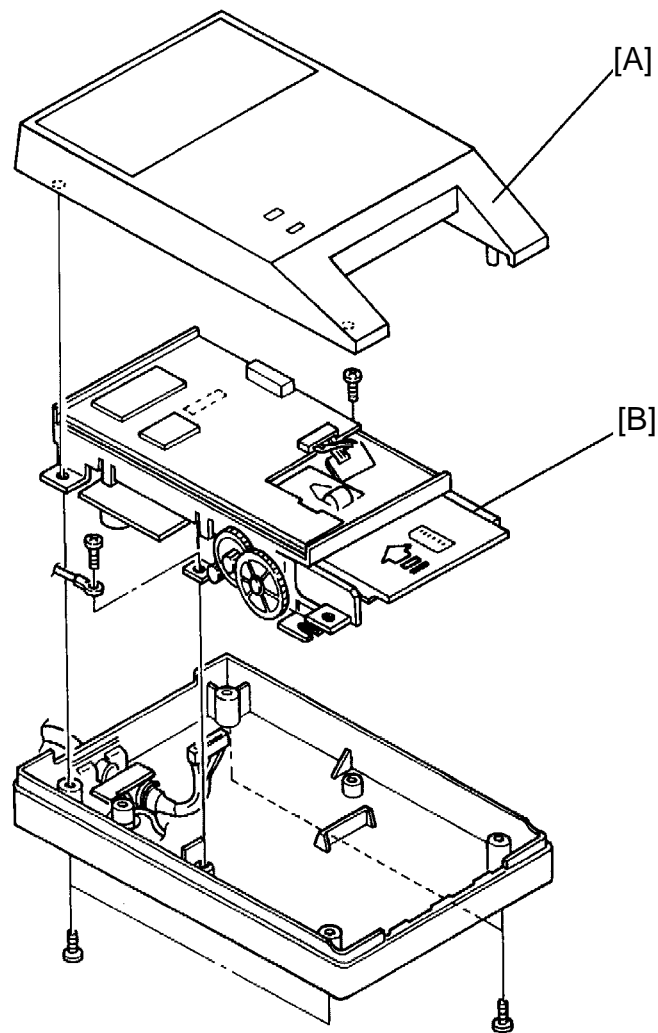
4. Swing out the main control board assembly (1 screw).
5. Run the menu reader harness [A] through the bracket hole [B], then set the cord stopper [C] on the bracket with pliers.
6. Wrap the grounding wire [D] twice around the coil [E] and secure the wire to the bracket.



7. Reinstall the main control board assembly.
8. Install the 2 locking supports [A] on the copier main board bracket [B] and install the interface board (A344) [C] on to the CN114 of the main board as shown.
9. Connect the menu reader harness [D] on to the CN702 (10P green) of the interface board and secure the grounding wire [E].
10. Install the ferrite core [F] on the menu reader harness as shown.
11. Fold the harness as shown (three-fold) and secure the tie wrap [G].
12. Reassemble all the covers.
13. Plug in the copier and turn on the main switch.
14. Check the operation of the menu reader.

4. REPLACEMENT AND ADJUSTMENT

4.1 LOWER TRANSPORT ROLLER UNIT REPLACEMENT



1. Turn off the main switch.
2. Remove the menu reader from the copier (3 strips of velcro tape).
3. Remove the upper cover [A] (4 screws) and the reader unit [B] (2 screws, 10P connector).

SECTION 13

FT4727/4427

1. SPECIFICATIONS

- Configuration:

Desktop
- Copy Process:

Dry electrostatic transfer system
- Originals:

Sheet/Book
- Original Size:

Maximum 11" x 17"
- Copy Paper Size:

Maximum 11" x 17"

Minimum 11" x 8 1/2" - Paper tray

5 1/2" x 8 1/2"(lengthwise)

-By-pass feed table only

(LCT 11" x 8 1/2" sideways only)
- (Duplex Copying)

Multiple:

8 1/2" x 11" (sideways)

Single:

Maximum 11" x 17"

Minimum 8" x 11"
- Copy Paper Weight:

• 250-sheet paper tray and 1000-sheet large capacity tray:

14 -- 34lb

• By-pass feed table:

14 -- 42lb

• Duplex:

17 -- 28lb

Reproduction Ratios: 4 Enlargement and 6 Reduction

	LT/LDG Version
Enlargement	200% 155% 129% 121%
Full Size	100%
Reduction	93% 85% 77% 74% 65% 50%

Receiving Tray Capacity:

250 sheets (8 1/2" x 14" and smaller)

100 sheets (11" x 17")

Power Source:

115V, 60HZ, more than 12A (for N.A)

Power Consumption:

Maximum: 1.5 KW
Warm-up: 0.77 KW
Stand-by: 0.14 KW
Copy Cycle (average): 1.2 KW

Noise Emission:

Stand-by: less than 40 dB
Copy Cycle (average):
less than 56 dB (copier only)
less than 59 dB (full system)
Maximum:
less than 62 dB (copier only)
less than 65 dB (full system)

Dimensions:

	Width	Depth	Height
FT4727	34.3" (42.2")	23.6"	21.3" (22.6")
FT4427	34.3" (42.2")	23.6"	21.3" (22.6")

():

When the by-pass feed table is opened, the copy tray is extended, and the platen cover is installed.

Weight:

Copier only (Without the optional platen cover=Approximately (4.4 lb)

FT4727: approximately 191.4 lb
FT4427: approximately 182.6 lb

Zoom:

From 50% to 200% in 1% steps

Copying Speed:

27 copies/minute (8 1/2" x 11" sideways)
16 copies/minute (8 1/2" x 14")
15 copies/minute (11" X 17")

Copying Speed with ARDF:

27 copies/minute (8 1/2" x 11" sideways)
16 copies/minute (8 1/2" x 14")
15 copies/minute (8 1/2" x 17")

(Single copy (1 to 1), full size)

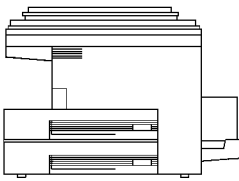
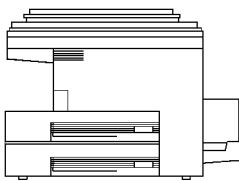
Warm-up Time:

Less than 110 seconds (20°C, 68°F)

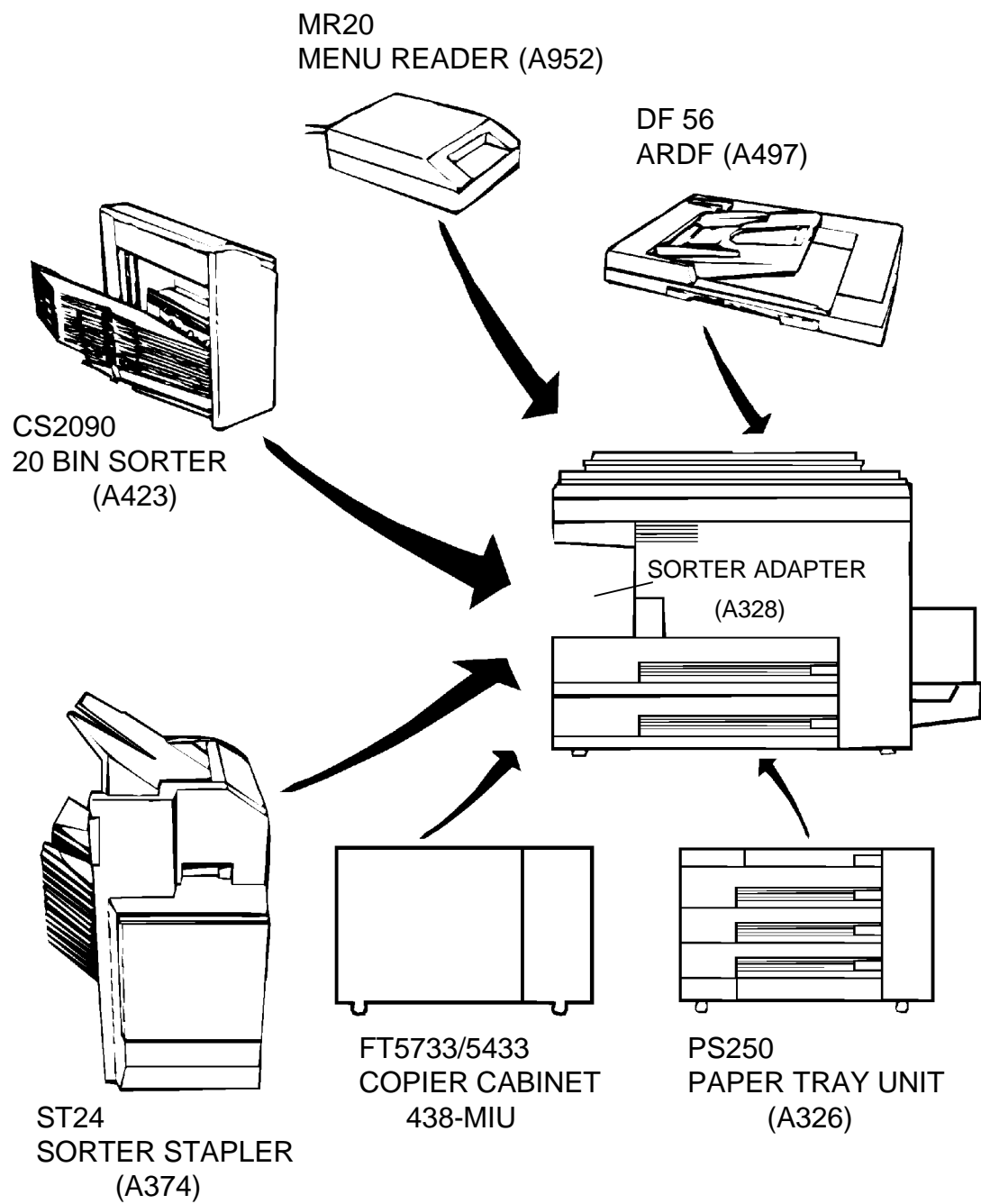
First Copy Time:	5.4 seconds 8 1/2" x 11" sideways FT 4727, Type 3: (Upper tray feed) 5.8 seconds FT4427, Type 2: (Large capacity tray feed)
Copy Number Input:	Ten keys, 1 to 999 (count up or count down)
Manual Image Density Selection:	7 steps
Automatic Reset:	1 minute standard setting; can also be set to 3 minutes or no auto reset.
Copy Paper Capacity:	<ul style="list-style-type: none"> • By-pass feed table; approximately 20 sheets • Paper tray: approximately 250 sheets • Large capacity tray; approximately 1000 sheets
Toner Replenishment:	Black: cartridge exchange (320 g/cartridge) yield: 10,500 copies.
Developer Replenishment	<ul style="list-style-type: none"> • Black: (1000g/bag) yield: 80,000 copies.
Optional Equipment:	<ul style="list-style-type: none"> • Platen cover • DF56, Document feeder • PS250, Paper tray unit with three paper trays • CS2090, 20 bin mini sorter • ST24, 20 bin sorter stapler • TYPE G, Sorter adapter (needed when installing the mini sorter, or the sorter stapler) • TYPE G, Interface PCB (needed when installing the sorter stapler or the menu reader) • Key counter • MR20, Menu reader (except for Europe)

2. MACHINE CONFIGURATION

2.1 COPIER

		
	FT4727 TYPE 2 (A088)	FT4427 TYPE 3 (A087)
UPPER TRAY	DUPLEX	250
LOWER TRAY	250	250
LCT	1,000	1,000

2.2 OPTIONAL EQUIPMENT

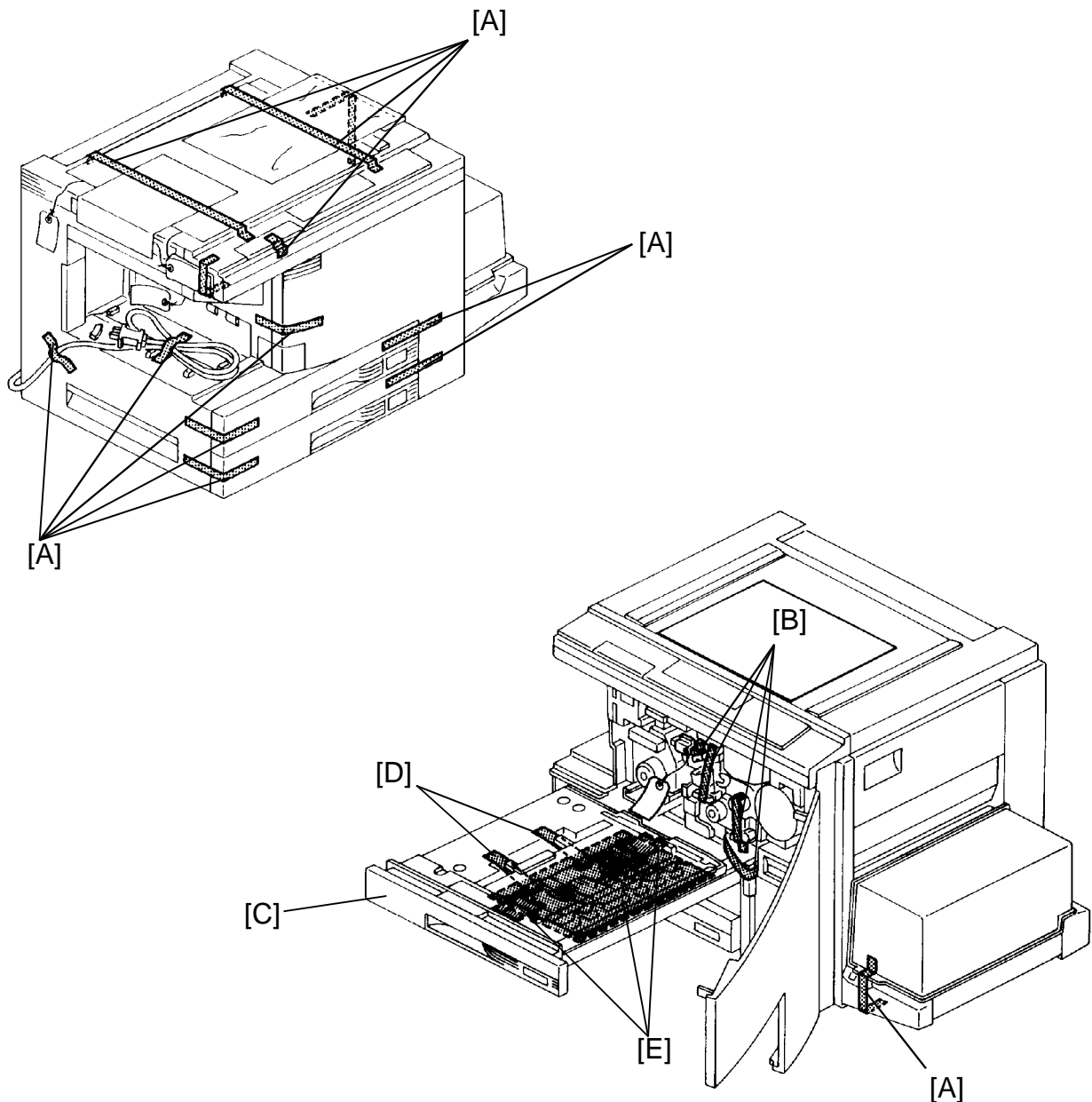


3. COPIER INSTALLATION

3.1 ACCESSORY CHECK

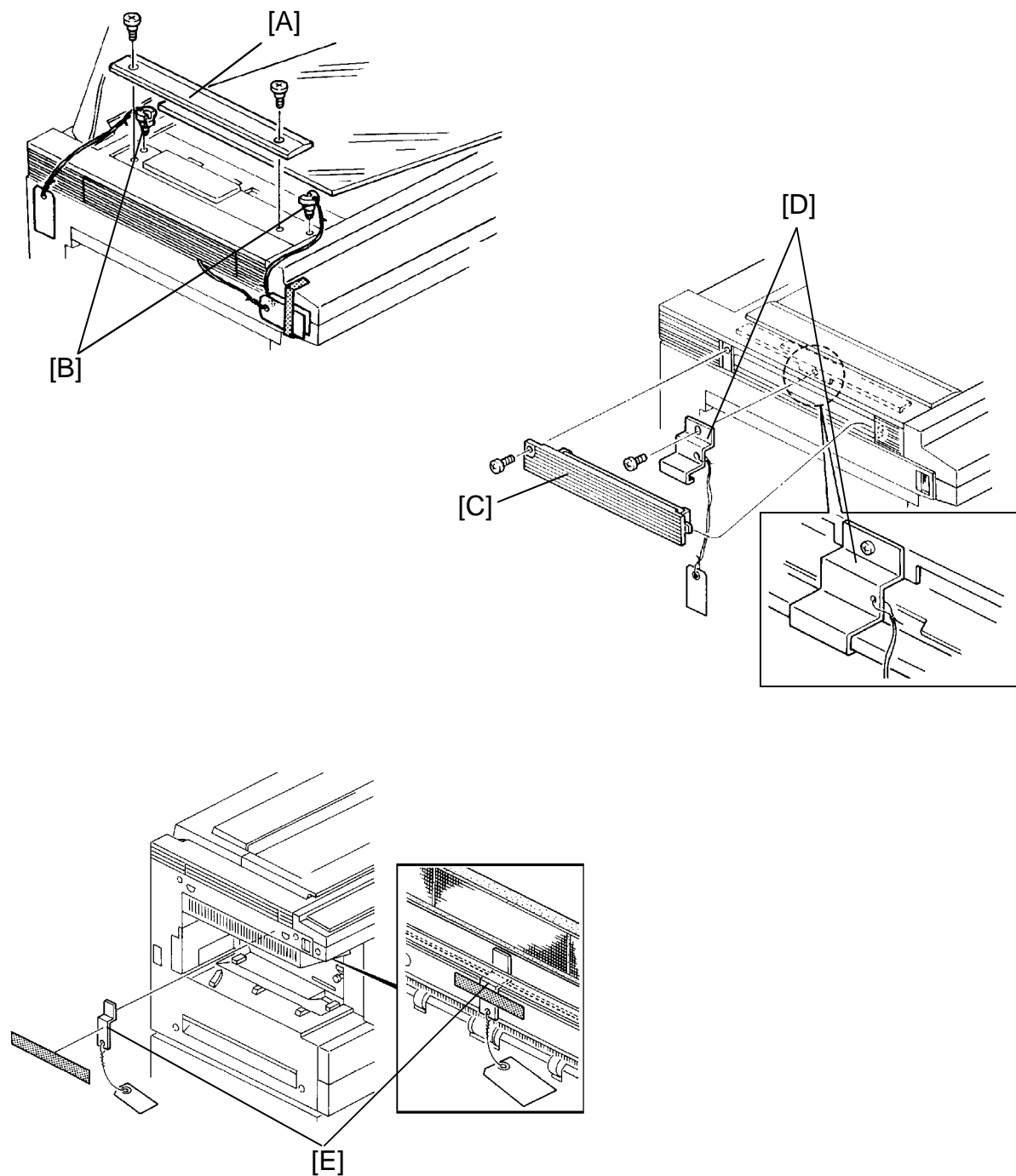
- 1. Receiving Tray..... 1
- 2. Outer Decal - Symbol Explanation 1
- 3. Sorter Key Top and Cover..... 1
- 4. Counter Set Key 1
- 5. Installation Procedure..... 1
- 6. Operating Instructions 1
- 7. New Equipment Condition Report 1
- 8. Envelope for NECR 1
- 9. User Survey Card 1

3.2 INSTALLATION PROCEDURE

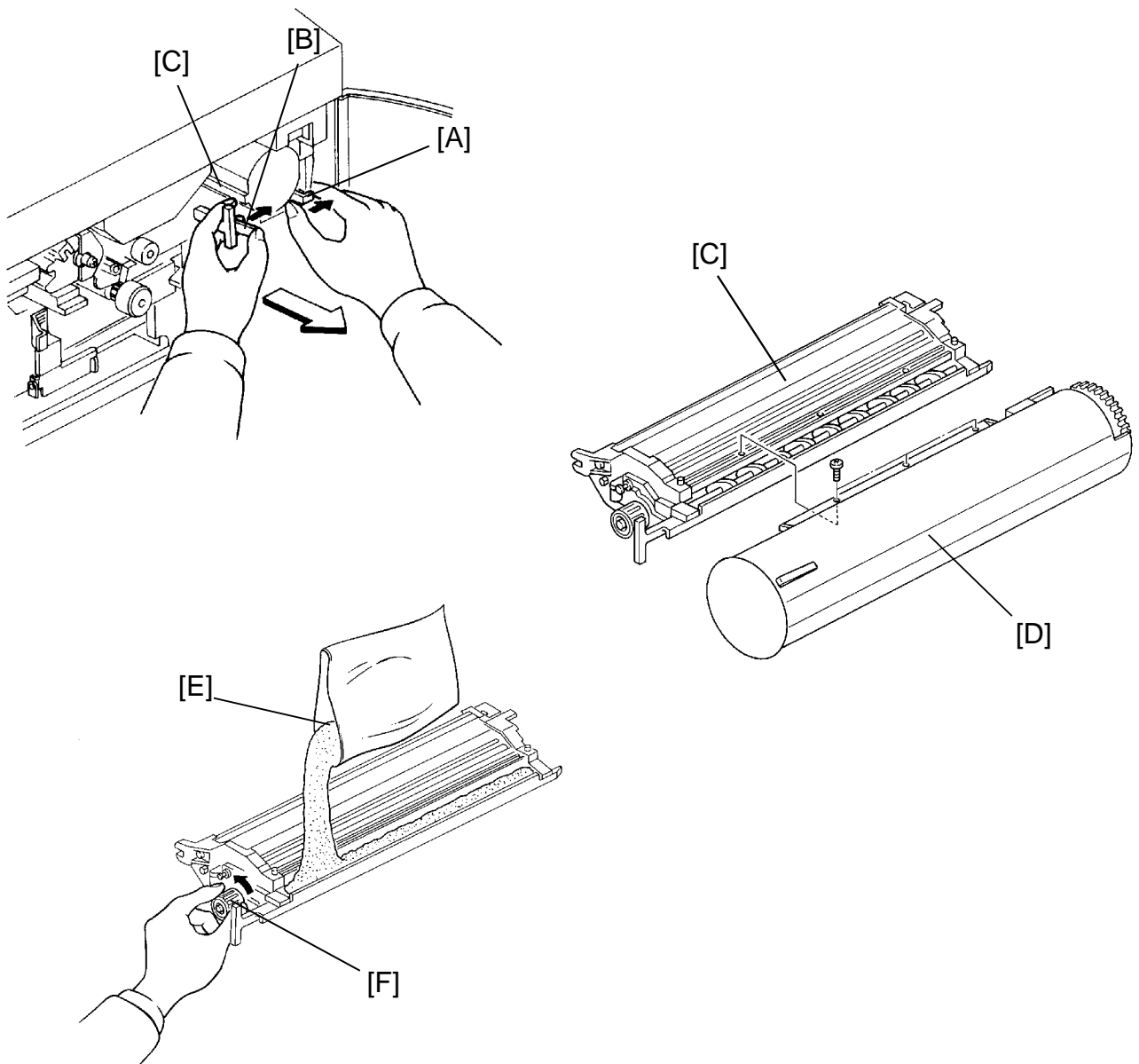


NOTE: Keep the shipping retainers after installing the machine. They will be reused in the future if the machine is transported to another location. Proper reinstallation of the shipping retainers is required in order to avoid any transport damage.

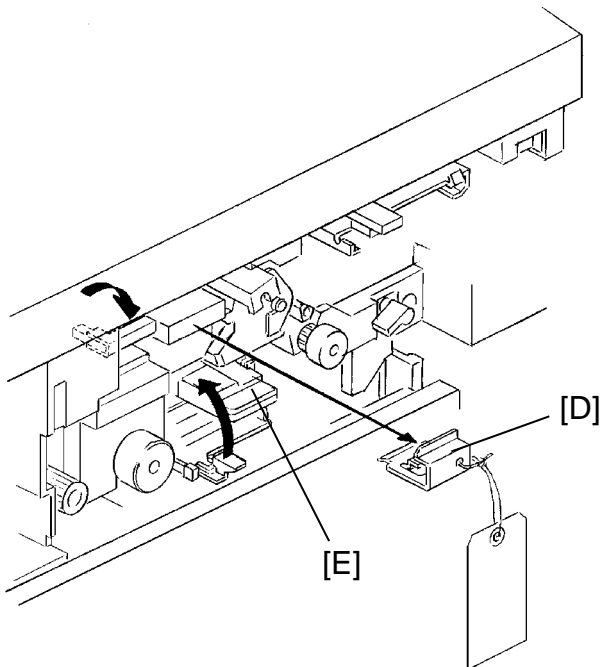
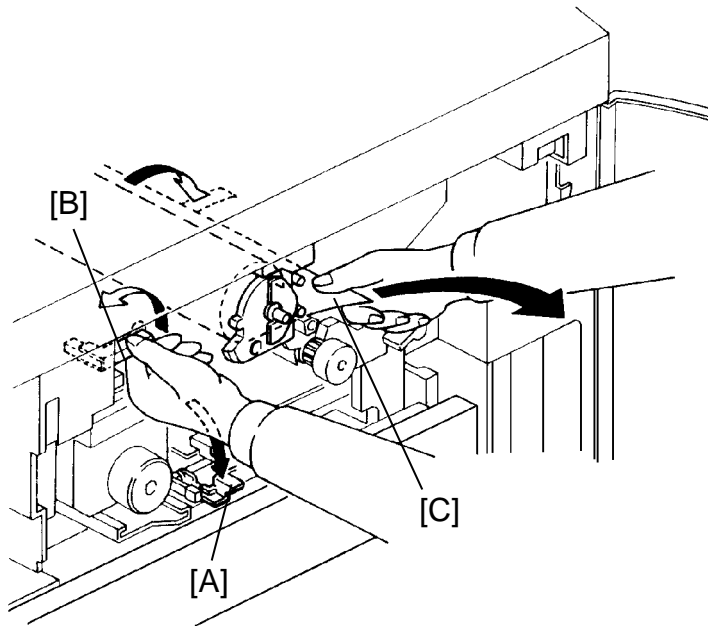
1. Remove the 12 strips of tape [A] as shown.
2. Open the front door and remove 4 strips of tape [B] as shown.
3. Pull out the duplex tray [C] and remove the 2 strips of tape [D] and 3 sheets of paper [E] (duplex machine only).



4. Remove the left scale [A] (2 shoulder screws).
5. Remove the scanner lock pins [B] from the front and the rear sides of the left scale bracket.
6. Reinstall the left scale.
7. Remove the left optics cover [C] (1 screw).
8. Remove the scanner lock plate [D] (1 screw) and reinstall the left optics cover.
9. Remove the shipping retainer [E] holding the ozone filter. The retainer is taped on the upper exit cover.



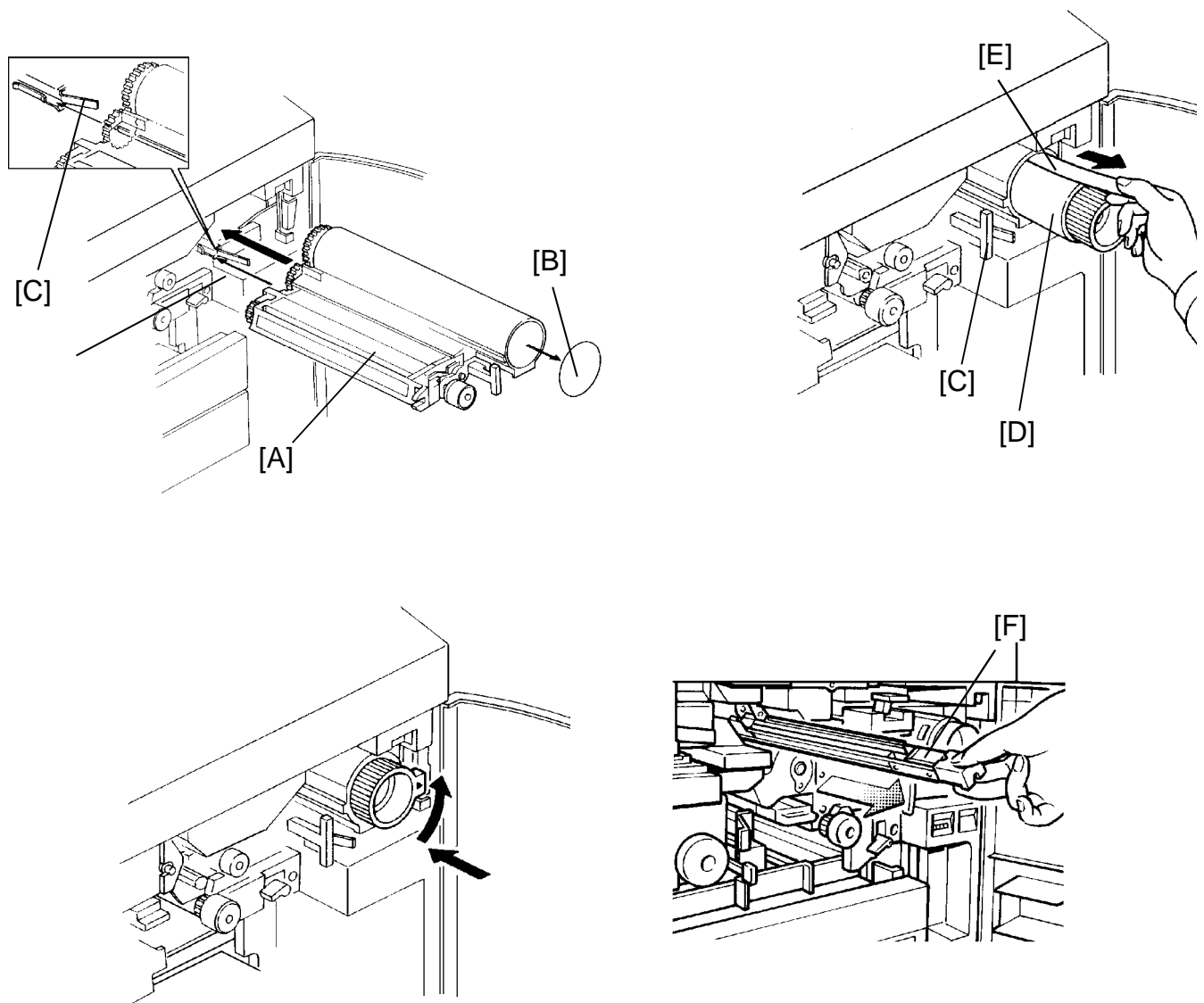
10. Push the development unit lock lever [A] to the right (to the lock position).
11. Move the development release lever [B] to the right and pull out the black development unit [C] half way. Holding the toner supply unit [D] with your right hand and the bottom of the development unit with your left hand, pull the unit all the way out . Place the unit on a clean sheet of paper.
12. Separate the toner supply unit from the development unit (3 screws).
13. Pour one pack of black developer [E] into the development unit while turning the development roller knob [F] counterclockwise. This will distribute the developer inside the unit.
14. Remount the toner supply unit on the development unit.



15. Lower the transfer & separation corona unit by pulling down the release lever [A].
16. Turn the cleaning unit release lever [B] counterclockwise to the upright position. (The cleaning unit is released from the drum.)
17. Remove the drum protective sheet [C] from the development unit opening.

CAUTION: To avoid damaging the pick-off pawls, remove the drum's protective sheet by pulling the lower side as shown in the figure.

18. Turn the cleaning unit release lever clockwise to the set position.
19. Remove the cleaning blade lock plate [D].
20. Reset the transfer & separation corona unit [E].



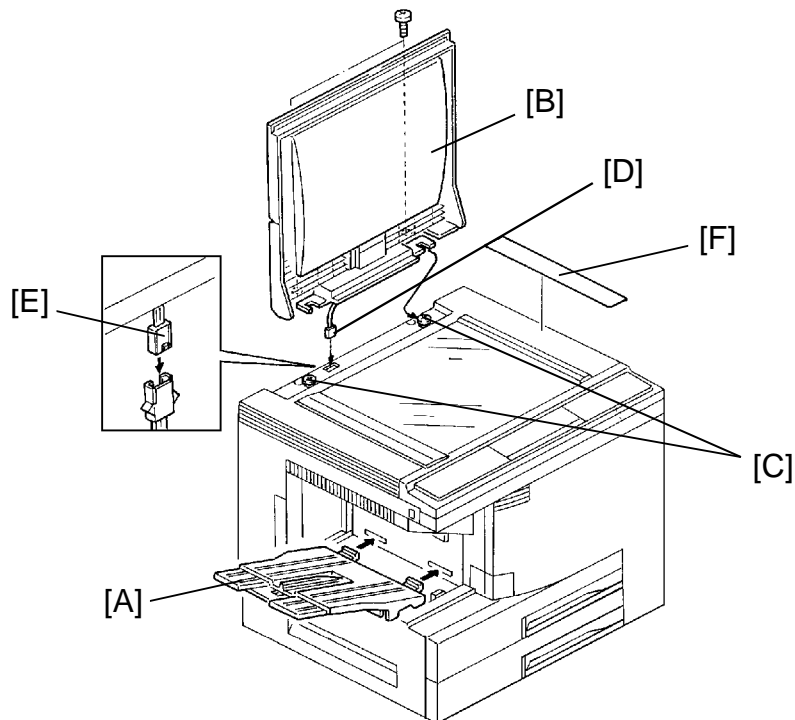
21. Install the black development unit [A] in the copier, and remove the cover sheet [B] from the toner supply unit.

- NOTE:**
- When installing the development unit, be sure that the development unit rail is placed directly on the development unit guide rail.
 - Make sure that the development release lever [C] is in its original position after the development unit is set.

22. Shake the toner cartridge [D] well from side to side. While pushing the toner cartridge in, insert it halfway into the holder with the seal [E] up.

23. As you peel off the seal, insert the cartridge completely. While pushing the toner cartridge in, turn it counterclockwise until it stops.

24. Slide out the charge corona unit [F] until it is fully extended and push it back in to the original position. Repeat this action several times.



25. Close the front door and set the copy tray [A].

NOTE: The following steps from 26 to 29 are required only to install the optional platen cover [B].

26. Remove the rear cover (remove 2 screws and loosen 2 screws).

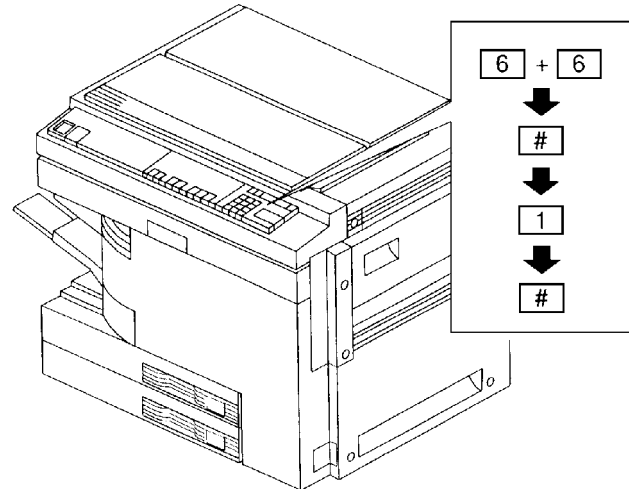
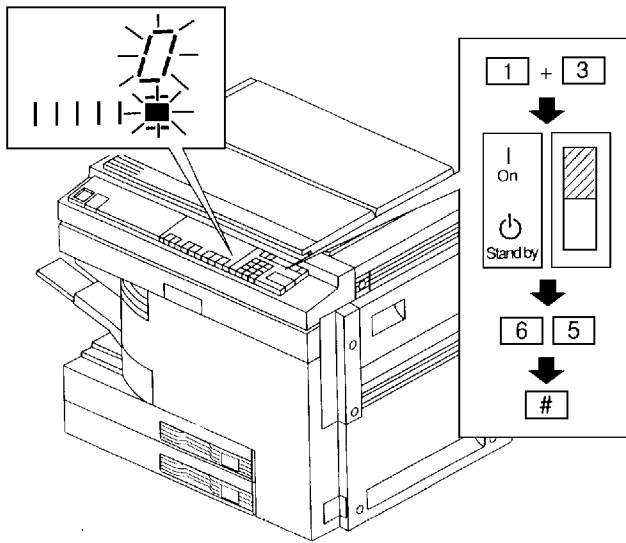
27. Install the 2 shoulder screws [C] on the top cover as shown.

28. Pass the harness [D] through the hole of the top cover and install the optional platen cover (2 screws).

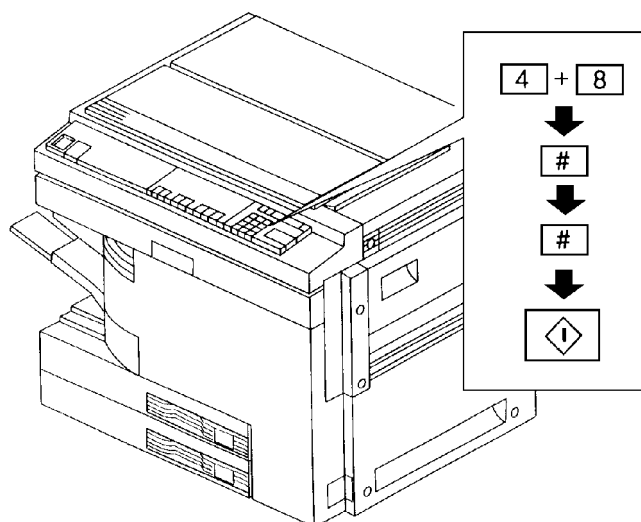
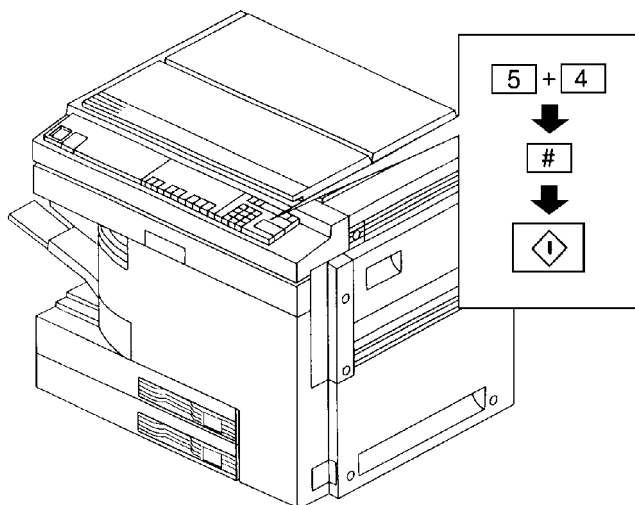
29. Couple the platen cover sensor connector [E] (3P white) with the copier and reinstall the rear cover.

30. Stick the symbols explanation decal [F] on the top cover as shown.

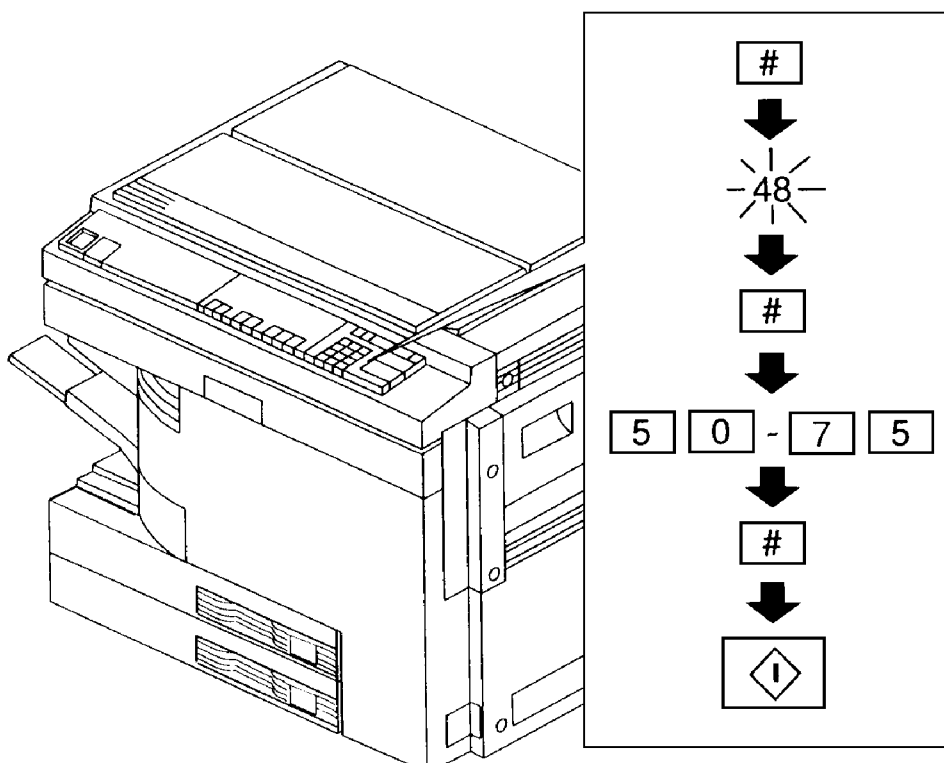
31. If the ARDF will be installed, stick the decal on the corresponding position of the ARDF.



32. Load 11" x 17" paper either in the 1st or the 2nd paper tray and plug in the machine.
33. While pressing both the "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the auto image density indicator and the copy counter number "0" are blinking.
34. Enter "65" using the number keys and then press the enter key.
 (The copier starts the black developer initialization, and this lasts about 5 minutes.)
35. Enter "66" using the number keys and press the enter key.
 Press "1", then the enter key.
 (The copier performs the drum initial setting.)



36. Enter "54" using the number keys and press the enter key, then the start key.
(The copier performs ID/V sensor adjustments.)
37. Enter "48" using the number keys and then press the enter key twice.
38. Set the test chart on the exposure glass.
39. Make a full size copy at the manual image density level #4 (center) after the copier has warmed up.



40. Confirm that level 2 of the gray scale is just visible on the copy.

If the image density is not correct, go through the following steps.

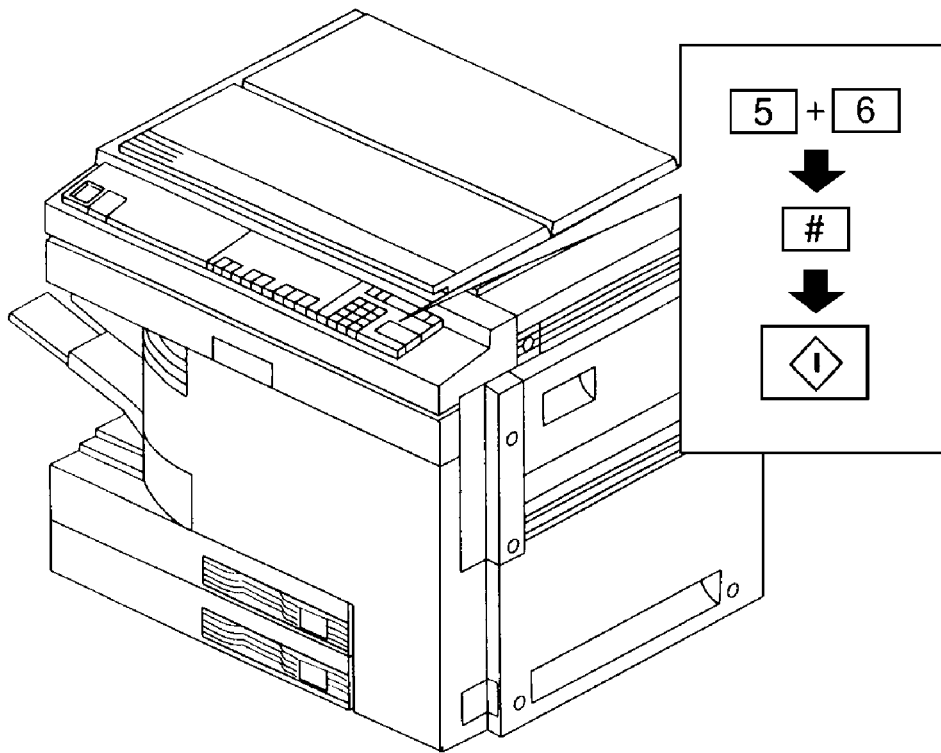
- (1) Press the enter key twice.
- (2) Change the exposure lamp voltage data displayed in the magnification ratio indicator. Use the number keys and follow these rules:

If the image density is too dark:	increase the setting
If the image density is too light:	decrease the setting

NOTE: The data can be set between 50 and 75 in 0.5 steps.

- (3) Press the enter key and then make a copy.
- (4) Confirm if the image density is correct or not.
If not, repeat the above steps from (1) to (3).

NOTE: The initial exposure lamp voltage **must** be adjusted in this step. If the adjustment is done after step 43 (the machine performs the initial VL pattern detection), the reference voltage for the exposure lamp voltage correction will be wrong throughout the drum's life.



41. Press the enter key and enter "56" using the number keys.
42. Press the enter key, then the start key.
(The copier performs the ADS sensor adjustment.)
43. Turn the main switch off and on.
44. Enter "6" using the number keys and make copies in the full size mode. (The copier performs the VR sensor initial check during the copy cycle. When the copy cycle is finished, the copier performs the VL sensor initial check by lighting the exposure lamp at the home position.)
45. Check the machine operation and copy quality.
46. Tell the customers that this copier sometimes keeps turning on the exposure lamp at the home position when copy jobs are finished (the same phenomenon as in step 44).
This is normal for this copier, and this also helps maintain good copy quality.

4. SERVICE TABLES

4.1 MEMORY ALL CLEAR PROCEDURE (SP99)

CAUTION: Memory all clear mode (SP99) clears all the correction data for process control and software counters, and returns all the modes to the default settings. Normally, this mode should not be performed.

This procedure is required only when the copier malfunctions due to a damaged RAM or when replacing the RAM board for any reason.

1. Access the SP mode through Access Procedure 3. (While pressing both the Clear Modes and Clear/Stop keys on the operation panel, turn on the main switch.)
2. Enter "99" and press the Enter key.
3. Enter "1" and press the Enter key.
4. Enter the factory-set values in the following SP modes:

40:	Jogger span (Duplex machine only)
41:	Lead edge erase
42:	Registration
43:	Vertical magnification
44:	Horizontal magnification
45:	Duplex magnification (Duplex machine only)
47:	Focus adjustment
50:	Lens error correction
62:	Grid reference voltage
161:	Grid volt/M-CH(P)
162:	T-CH PWM
163:	D-CH (AC) PWM
164:	D-CH (DC) PWM

NOTE: There is an SP data table sheet underneath the front upper cover which gives the above factory-set values.

5. Turn off the main switch.
6. Clean the used toner tank because the toner end counter has been cleared.

7. Replace the OPC drum with a new one.

NOTE: Since the drum counter for the process control has been cleared, the old drum cannot be used. If the old drum is used after all memory is cleared, a dirty background and/or toner scattering will appear on copies sooner or later because proper VG correction will not be applied to the drum.

8. Clean the optics, sensors, and inside of the machine if necessary.

9. If the high voltage supply board - CTBG and/or - D is not the original one, do the following:

- 1) Clean the corona unit casings and replace the corona wires with new ones.
- 2) Enter to the SP mode by the access procedure 2.
- 3) Enter the grid voltage correction data in SP62 referring to the label on the high voltage supply board - CTBG.
- 4) Adjust the transfer corona current if the high voltage supply board - CTBG is not the original one.
- 5) Adjust the separation corona current if the high voltage supply board - D is not the original one.

10. Enter the SP mode using access procedure 2. (While pressing both "1" and "3" on the operation panel number keys, turn on the main switch)

11. Enable optional equipment operation by SP71 (sorter) and SP72 (paper tray unit) as necessary.

12. Perform the following SP modes:

SP66: Drum initialize

SP54: Auto Vsg/Vlg adjustment

SP48: Exposure lamp voltage adjustment

SP56: Auto ADS gain adjustment

13. Check copy quality and the paper path and do the necessary adjustments.

4.2 SERVICE PROGRAM MODE TABLE

- NOTE:**
- 1. A "□" after the mode name means that copies can be made. For these modes, the copier goes automatically into copy mode when an SP mode number is selected by pressing the "#" key, or when the data number for adjustment is entered by pressing the "#" key after selecting the SP mode number. To make copies, enter desired copy quantity, select ID level and paper tray, then press the Start key. If you do not wish to make copies, press the "#" key instead of the Start key.
 - 2. A "•" before the mode number means that the mode can be accessed by users and sales representatives.
 - 3. In the *Function* column, comments (extra information) are in italics.
 - 4. In the *Data* column, the default value is printed in bold letters.

Mode No.		Function	Data
2	Free Run Set	Sets the copier in free run mode. <i>(The copier runs without paper feeding. After SP2 is set, press the start key to start free run operation. Before pressing the start key you can select any other SP mode in which copying is possible [□ mark]. ["#"→SPNo.→"#"→Start key].)</i>	
3	Free Run Reset □	Resets the copier from free run mode.	
4	Forced Start □	Copies can be made before being the copier is warmed up. <i>(Copy quality and paper transport are not assured.)</i>	
5	Lamp OFF □	Copies are made with exposure lamp OFF. <i>(Black copies are made.)</i>	
6	No Misfeed Detection □	Copies are made without ON check of jam detection.	
7	Call Service Indicator	Indicates the cause of a blinking indicator. <i>(Indicates 0, 1, 2, 3, 12, 13, 23, or 123 in the three digit indicator. PM: The three digit indicator blinks. ID sensor failure: ADS or manual ID indicator blinks. Used toner overflow: E70 blinks in the three digit indicator.)</i>	0: Normal 1: PM 2: ID sensor failure 3: Used toner overflow
8	Input Check □	Displays the input data from sensors and switches. <i>(For data, see page 13 - 33.)</i>	
9	Output Check	Electrical components turn on. <i>(For data, see page 13 - 36.)</i>	

Mode No.		Function	Data
•11	All Indicators ON	Turns on all the indicators on the operation panel. <i>(To turn off the indicators, press the "#" key.)</i>	
13	A3/DLT Double Count	Selects single or double count for the total counter and key counter in A3/11" x 17" copying. <i>(Double count is not applied for copies from the by-pass feed table. Double count is applied to the user code counter [SP91] and the mechanical counters.)</i>	0: Single 1: Double
•14	Manual Staple Reset	Selects accessible period for manual stapling after completing a copy job in sort mode. <i>(Only when the sorter stapler is installed.)</i>	0: 20 sec. 1: 1 min. 2: None
•15	Auto Reset	Selects auto reset time of 1 or 3 minutes, or cancels this mode.	0: 1 min. 1: 3 min. 2: None
•16	Count Up/Down	Selects count up or count down.	0: Up 1: Down
•17	Auto Cassette Shift	Selects auto cassette shift mode. <i>(Copier automatically shifts to the LCT or paper tray holding the same size paper when paper runs out.)</i>	0: Yes 1: No
•19	ID Mode	Specifies whether the copier defaults to ADS or manual ID mode when the main switch is turned on.	0: ADS 1: Manual
•20	LCT Priority	Sets the feed station priority to LCT or the 1st tray.	0: On 1: Off
•21	APS Priority (Copier)	Specifies whether the copier defaults to APS or manual mode when the main switch is turned on.	0: APS 1: Manual 2: No
22	SADF Auto Reset	Selects auto reset time for SADF mode.	0: 5 sec. 1: 60 sec
23	ADF Free Size	Enables originals of various sizes to be fed from the same width stack. <i>(When this mode is enabled, the job interval for each original increases.)</i>	0: No 1: Yes
24	Side Edge Erase	Selects the width of the side erase margin in Erase Edge mode (Program key + 7 + #) or Erase Center And Edge mode (Program key + 8 + #). <i>(0: 10 mm (A3, A4, B4, B5 lengthwise) 15 mm (11"X17", 11"X8 1/2" sideways) 13 mm (8 1/2"X14", 8 1/2"X11" lengthwise) 11 mm (F) 1: 5 mm (A3, A4, B4, B5 lengthwise) 9 mm (11"X17", 11"X8 1/2" sideways) 8 mm (8 1/2"X14", 8 1/2"X11" lengthwise) 7 mm (F))</i>	0: Normal 1: Narrow

Mode No.		Function	Data
25	Staple Limit	Sets the staple limit of copies in each bin, in staple mode. <i>(Only when the sorter stapler is installed.)</i> Yes: 20 sheets, No: 25 sheets for A4, B5, and 8 1/2" x 11" Yes: 10 sheets, No: 15 sheets for B4, A3, 8 1/2" x 14", and 11" x 17"	0: Yes 1: No
•26	Auto APS Select (ADF)	Selects the priority of APS mode when originals are set on the ADF. <i>(Only when the ADF is installed.)</i>	0: Yes 1: No
28	Auto Sort Select (ADF)	Sort Mode is automatically selected when more than 1 original is set on the ADF and the entered copy quantity is greater than 1 and less than 21 (11 for the micro sorter). <i>(Sorter and ADF must be installed on the machine.</i> <i>When in duplex 1 [1-sided original mode], more than 2 originals must be set.)</i>	0: Manual 1: Auto Sort
29	Zero Cross Control	Selects fusing temperature control mode. <i>(After selecting the control mode and turning the main switch off/on, the fusing temperature control mode changes.)</i>	0: Yes (Zero cross) 1: No (Phase)
30	Black Toner Supply Mode	Selects black toner supply mode. <i>(See SP 31/SP32 for toner supply amount.)</i>	0: Detect Mode 1: Fixed Mode
31	Black Toner Supply Ratio (Detect Mode)	Determines how much toner is supplied in detect mode.	0: 15% 1: 7% 2: 30% 3: 60%
32	Black Toner Supply Ratio (Fixed Mode)	Determines how much toner is supplied in fixed mode.	0: 7.0% 1: 3.5% 2: 10.5% 3: 14.0%
33	Black (ID sensor) Pattern Bias	Sets the bias voltage applied to the development roller for the ID sensor pattern. <i>(0: -200 V= Normal</i> <i>1: -160 V= Lighter</i> <i>2: -220 V= Darker</i> <i>3: -240 V= Darkest)</i>	0: N 1: L 2: H 3: HH
•34	ADS Density	Selects the image density level in ADS mode. <i>(Data 1: Increases charge grid voltage [-50 V]. Development bias voltage has standard value.</i> <i>Data 2: Increases development bias voltage [-40 V]. Charge grid voltage has standard value.)</i>	0: N (Normal) 1: H (Darker) 2: L (Lighter)

Mode No.		Function	Data
35	Black ID Detection	Black ID sensor check is performed every 5 copies or 10 copies. <i>(If low image density occurs in the toner near end condition, change the data to "1".)</i>	0: 10 copies 1: 5 copies
•36	Image Shift (Duplex 1)	Selects the margin on the right side of the reverse page in duplex 1 mode. <i>(For type 2 copier only. When duplex 1 [1-sided original mode] is selected, this margin is automatically added.)</i>	0: 5 mm 1: 0 mm 2: 10 mm 3: 15 mm
37	Black Bias	Adjusts black bias voltage if the image density at level 4 cannot be adjusted by (SP48 exposure lamp voltage). This must be done only other replacing the OPC drum. <i>(0: Vo = Normal 1: Vo +40 V = Darkest 2: Vo +20 V = Darker 3: Vo -20 V = Lighter 4: Vo -40 V = Lightest)</i>	0: N 1: HH 2: H 3: L 4: LL
•38	Lead and Trail Edge Erase	Selects the width of the lead and trail edge erase margins in Erase Edge mode (Program key + 7 + #) or Erase Center And Edge mode (Program key + 8 + #).	0: 10 mm 1: 5 mm 2: 15 mm 3: 20 mm
•39	Center Erase	Selects the width of the center erase margin in Erase Center mode (Program key + 6 + #) or Erase Center And Edge mode (Program key + 8 + #).	0: 20 mm 1: 10 mm 2: 15 mm 3: 25 mm
40	Jogger Span	Adjusts the stop position of the jogger fences. <i>(For type 2 copier only. 0.5 mm per step. [max, -4.0 mm to +3.5 mm].)</i>	0~15 8 = default
41	Lead Edge Erase <input type="checkbox"/>	Adjusts lead edge erase margin. <i>(0.5 mm per step [max -4.0 mm to +3.5 mm].)</i>	0~15 8 = default
42	Registration <input type="checkbox"/>	Adjusts lead edge registration. <i>(0.5 mm per step [max -4.0 mm to +3.5 mm].)</i>	0~15 8 = default
43	Vertical Magnification <input type="checkbox"/>	Adjusts magnification in the paper travel direction. <i>(0.2 % per step. [max. -1.6% to +1.4%].)</i>	0~15 8 = default
44	Horizontal Magnification <input type="checkbox"/>	Adjusts magnification perpendicular to the direction of paper travel. <i>(0.2 % per temp. [max. -3.2% to +3.0%].)</i>	0~31 16 = default

Mode No.		Function	Data
45	Duplex Magnification	Adjusts vertical magnification of the first image to equal the second image in the duplex mode.	0: +0.4% 1: No correction 2: +0.2% 3: +0.6% 4: +0.8% 5: +1.0% 6: +1.2% 7: +1.4% 8: +1.6% 9: +1.8% 10: +2.0%
•46	Highlight Bias (Manual ID Level 7)	Selects the development bias voltage of manual ID level 7. <i>(0: -240 V = Normal 1: -200 V = Darker 2: -280 V = Lighter 3: -320 V = Lightest)</i>	0: N 1: D 2: L 3: LL
47	Focus Adjustment <input type="checkbox"/>	Adjusts the 4th/5th mirror position to correct the fine focus. <i>(0.6 mm per pulse. SP47 must be done after vertical and horizontal magnification adjustments [SP43 and 44].)</i>	0~80 40 = default
48	Lamp Voltage <input type="checkbox"/>	Adjusts the exposure lamp voltage. <i>(50 to 75 V in 0.5 V steps. The lamp voltage must be adjusted only after performing SP 66 when replacing the OPC drum.)</i>	50~75V 63V (115V) = default
49	Fusing Temperature	Adjusts fusing temperature. <i>(175 to 190 °C in 1 °C steps.)</i>	175~190 °C 185 ° = default
50	Lens Error Correction <input type="checkbox"/>	Adjusts the lens position to correct magnification in enlarge/reduction mode. <i>(0.1% per step [max. -0.8%, to +0.7%].)</i>	0~15 8 = default
51	Lamp Voltage Check	Displays the exposure lamp voltage. <i>(The exposure lamp, main motor, fusing exhaust fan, and exhaust blower turn on for 10 seconds when the Enter key is pressed. Press the "•" key to check the target lamp voltage (including corrections). This value always includes -0.5V correction because of the light intensity control program (regarding the first copy cycle). Press the C/S key to turn this mode off. Do not repeat more than 5 times to avoid overheating the optics cavity.)</i>	[V]
52	Fusing Temperature Check <input type="checkbox"/>	Displays the fusing temperature.	[°C]
53	Drum Temperature Check <input type="checkbox"/>	Displays the temperature around the drum.	[°C]

Mode No.		Function	Data
54	Auto Vsg/Vlg Adjustment <input type="checkbox"/>	Adjusts the ID sensor Vsg and the V sensor Vlg automatically when the start key is pressed. <i>(Adjusted ID sensor and V sensor PWM values are displayed in the three digit indicator. The adjusted output voltage can be monitored by SP165 (ID sensor) and SP166 (V sensor).)</i>	
55	Vsp/Vsg Data <input type="checkbox"/>	Displays the Vsg and Vsp readings. The Vsg reading is displayed while the "0" key is held down. <i>(When making copies, the Vsp and Vsg voltage readings are updated every 10 or 5 copies [ID sensor check timing].)</i>	[V]
56	Auto ADS Gain Adjustment	Adjusts the ADS gain data automatically when the start key is pressed. <i>(Close the platen cover to prevent external light from reaching the ADS sensor when performing this adjustment. The gain data is displayed in the three digit indicator. The adjusted ADS sensor output voltage can be monitored by SP167.)</i>	
58	Toner End Counter Check	Displays the contents of the black toner end counter. <i>(Toner end condition is not counted if the toner end condition happens within 250 copies after the previous toner end condition.)</i>	
59	Bias Voltage Check <input type="checkbox"/>	Displays bias voltage. Press the Start key to display the bias voltage. Press the C/S key to stop.	[V]
62	Grid Reference Voltage	Sets the grid voltage correction data to correct the output from the high voltage supply board [G]. <i>(A label on the high voltage supply board gives the correct value. When the high voltage supply board [CTBG] is replaced, set the data using SP62.)</i>	704
65	Black Developer Initialize	Agitates new black developer for about 5 minutes. Press the start key to begin operation. <i>(This mode must be performed when new developer is put in. The three digit indicator shows the remaining time of the operation in seconds.)</i>	

Mode No.		Function	Data
66	Drum Initialize	Used to set new drum condition. (This must be done when a new drum is installed. The OPC counter, VR correction level, and Vref [initial Vlp/Vlg] are cleared. To set, press "1" then the "#" key. The three digit indicator counts down from 100 to 0 as the initialization is done.)	0: NO 1: YES
67	Drum Correction Level (VR)	Displays the present VR correction level. (VR level [%]=Vrp/Vrg x 100)	[Display only] 0: 100-84 1: 83-58 2: 57-41 3: 40-28 4: 27-0
68	Lamp Correction Level (VL)	Displays the present Vdat. (Vdat = Vlp/Vlg x 100) The VL level (%) is displayed while the "•" key is held down. (VL level [%] = Vdat/Vref x 100 = [(Vlp/Vlg)/(Initial Vlp/Vlg)] x 100)	[Display only] VL level 0-100 : +1V 101-150: 0V 151- : -1V
69	Sense Drum Correction Level (VR) (Forced VR Detection)	Detects VR correction level regardless of the drum counter. Press the start key to set operation. (The detection will be done in the first 5 copy cycles after exiting the SP mode. The three digit indicator counts down from 100 to 0 when this mode is accepted.)	
70	Sense Lamp Correction level (VL) (Forced VL Detection)	Detects VL correction level regardless of the drum counter. Press the start key to begin operation. (VL pattern detection is done 4 times. Vdat is displayed in the three digit indicator for each detection. The average of the 4 detections can be monitored by SP68.)	
71	Sorter	Enables sorter operation.	0: No sorter 1: Micro sorter 2: Mini sorter 3: Midi sorter 4: Sorter stapler 5: Sorter adapter
72	Option Paper Tray Unit	Enables paper tray unit operation.	0: No 1: Yes
73	LCT Paper Size	Selects paper size for the LCT. (For type 2 and type 3 only)	0: A4 1: B5 2: LT
76	Sorter Max	Sets the sort/stack quantity limit. (0: No= No sort/stack limit. 1: Yes=Sort/stack amount is limited, the amount depends on which sorter is installed.)	0: No 1: Yes

Mode No.		Function	Data
77	(ADF) Auto Feed Out (Duplex mode)	Sets the copier to eject the final copy if an odd number of originals is set. <i>(When "Yes", the final sheet is fed out; When "No", the sheet stays in the duplex tray.)</i>	0: Yes 1: No
83	Toner End Counter Clear	Resets the used toner overflow condition (E70) and clears the toner end counter (SP58). <i>(To clear, press "1" then the "#" key. The three digit indicator counts down from 100 to 0 when this function is used. SP83 must be used when the used toner tank is cleaned.)</i>	0: No 1: Yes
87	PM Interval	Sets the interval of the PM counter.	0: No PM 1: 60 K 2: 80 K 3: 100 K 4: 120 k
88	PM Counter	Displays contents of the PM counter. <i>(When entering this mode by pressing the "#" key, the first three digits are displayed in the three digit indicator. Hold down the "." key to display the second three digits. When the PM counter is exceeded, the three digit indicator [reproduction ratio] blinks.)</i>	
89	PM Counter Clear	Resets the PM counter. <i>(Use this mode after performing PM. The three digit indicator counts down from 100 to 0 when this function is used.)</i>	
90	User Code Mode	Enables user code mode (The key counter shorting connector must be removed.) <i>(If this mode is set, users must enter a code to make copies. Resets when auto clear mode functions or when C/S and clear modes keys are pressed together. The user codes are the following 20 numbers: 1101, 1202, 1303, 1404, 1505, 1606, 1707, 1808, 1909, 2010, 2111, 2212, 2313, 2414, 2515, 2616, 2717, 2818, 2919, 3020).</i>	0: No 1: Yes

Mode No.		Function	Data
•91	User code Counter Check	Displays the contents of each user code counter. use the "+" and "--" ("up" and "down") keys to select user code. (The last two digits of the user code are displayed in the copy counter.) <i>(User counters count from 0 to 999999. Press "#" key to display the first three digits in the three digit indicator. Hold down the "•" key to display the second three digits.)</i>	
•92	User Code Counter Clear	Resets counters of all the user codes (SP91). <i>(To reset, press "1" then the "#" key. The three digit indicator counts down from 100 to 0 when this function is used.)</i>	0: No 1: Yes
•93	Copy Limit	Limits the maximum copy quantity that can be entered.	1 -- 999 999 = default
97	SC/Jam Counter Clear	Clears all the service call and jam counters. <i>(To clear, press "1" then the "#" key. The three digit indicator counts down from 100 to 0 when this function is used.)</i>	0: No 1: Yes
98	Counter Clear	Clears the following counters: - Operation Time (motor count only) (SP100) - Copy/Original Counters (SP101) - SC Counters (SP120) - Jam Counters (SP130) - PM Counter (SP88) - User Code Counters (SP91) - User Program <i>(To clear, press "1" then the "#" key. The three digit indicator counts down from 100 to 0 when this function is used.)</i>	0: No 1: Yes
99	Memory All Clear	Clears all counters and returns all modes to the default setting. <i>(To access this mode turn on the main switch while pressing both the "Clear Modes" and "C/S" keys. Then enter "99" and press the "#" key. To clear, press "1" then the "#" key. The three digit indicator counts down from 100 to 0 when this function is used.)</i>	0: No 1: Yes

Mode No.		Function	Data
100	Operation Time	<p>Displays the total (accumulated) time that the main motor has operated. <i>(Time in hours.</i> <i>-Motor Count-</i> <i>Press the "#" key to display the first three digits in the three digit indicator.</i> <i>Hold down the "•" key to display the second three digits.</i> <i>-Drum Count-</i> <i>Hold down the "0" key to display the first three digits in the three digit indicator. Hold down the "0" & "•" keys to display the second three digits.</i> NOTE: <i>Drum counter can be cleared by using SP66.)</i></p>	
101	Copy/Original Counter	<p>Displays the total number of the following copies or originals. Use the "+" & "--" ("up" & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number, displayed in the copy counter, is selected by using the "+" & "--" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits.)</i></p>	
101-1	Total Counter	Displays the total number of copies	
101-6	Duplex Counter	Displays the total number of duplex copies made.	
101-7	ADF Counter	Displays the total number of copies made using the ADF.	
101-8	Staple Counter	Displays the total number of sets of stapled copies.	
101-9	Paper Tray Unit Counter	Displays the total number of sheets fed from the paper tray unit.	
101-10	By-pass/LCT Counter	Displays the total number of sheets fed from the by-pass feed table or the LCT.	
101-12	A3/11" x 17" (DLT) Counter	Displays the total number of A3 or 11"x 17" copies.	
101-13	B4/8 1/2" x 14" (LG) Counter	Displays the total number of B4 or 8 1/2" x 14" copies.	
101-14	A4/8 1/2" x 11" (LT) Counter	Displays the total number of A4 or 8 1/2" x 11" copies.	
101-15	B5 Counter	Displays the total number of B5 copies.	
101-16	Original Total Counter	Displays the total number of originals copied.	
101-17	Original Counter (ADF)	Displays the total number of originals copied using the ADF.	
101-18	Reduction Counter	Displays the total number of copies made in reduction mode.	
101-19	Enlargement Counter	Displays the total number of copies made in enlargement mode.	

Mode No.		Function	Data
110	Supply Counter	Displays the total number of copies made by using the following supplies. Use the "+" & "--" ("up" & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number displayed in the copy counter is selected by using the "+" & "--" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits.)</i>	
110-1	Drum Counter	Displays the total number of copies made using the present drum.	
110-2	Black Developer Counter	Displays the total number of copies made using the present black developer.	
120	SC Counter	Displays the total number of the following service calls. Use the "+" & "--" ("up" & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number displayed in the copy counter is selected by using the "+" & "--" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits.)</i>	
120-1	SC Total Counter	Displays the total number of times the service call indicator has turned on.	
120-2	SC Optics Counter	Displays the total number of "Optics" service calls.	
120-3	SC Exposure Counter	Displays the total number of "Exposure" service calls.	
120-4	SC Drive Counter	Displays the total number of "Functional Drive" service calls.	
120-5	SC Fuser Counter	Displays the total number of "Fusing" service calls.	
120-6	SC Communication Counter	Displays the total number of "Interface communication" service calls.	
120-7	SC Duplex Counter	Displays the total number of "Duplex" service calls.	
120-8	SC Feed Counter	Displays the total number of "Paper Feed" service calls.	
120-9	SC Sorter Counter	Displays the total number of "Sorter" service calls.	

Mode No.		Function	Data
130	Jam Counter	Displays the total number of paper jams. Use the "+" & "--" ("up & "down") keys to select the desired number. <i>(Press the "#" key to enter this mode. When the desired number displayed in the copy counter is selected by using the "+" & "--" keys, the first three digits are displayed in the three digit indicator. Hold down the "•" key to display the second three digits.)</i>	
130-1	Jam Total Counter	Displays the total number of paper jams excluding original jams in the ADF (SP130-14).	
130-2	Jam 1st Feed Counter	Displays the total number of paper jams from the upper paper tray (Type 1 & 3).	
130-3	Jam 2nd Feed Counter	Displays the total number of paper jams from the lower paper tray.	
130-4	Jam 3rd Feed Counter	Displays the total number of paper jams from the upper tray of the paper tray unit.	
130-5	Jam 4th Feed Counter	Displays the total number of paper jams from the middle tray of the paper tray unit.	
130-6	Jam 5th Feed Counter	Displays the total number of paper jams from the lower tray of the paper tray unit.	
130-7	Jam By-pass/LCT Feed Counter	Displays the total number of paper jams from the by-pass feed table or the LCT.	
130-8	Jam Fuser Counter	Displays the total number of paper jams in the fusing unit area.	
130-9	Jam Inverter Counter	Displays the total number of paper jams in the duplex entrance area.	
130-10	Jam Duplex Stack Counter	Displays the total number of paper jams in the turn gate area during duplex stacking.	
130-11	Jam Duplex Feed Counter	Displays the total number of paper jams from duplex tray.	
130-12	Jam Exit Counter	Displays the total number of paper jams in the copier exit area.	
130-13	Jam Sorter Counter	Displays the total number of paper jams in the sorter.	
130-14	Jam ADF Counter	Displays the total number of original jams in the ADF.	
150	Paper Feed Timing (By-pass/LCT) □	Adjusts the registration paper buckle amount for the paper fed from the by-pass feed table or the LCT. <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 19: 46 mm 20: 47 mm 21: 48 mm -- 24: 51 mm

Mode No.		Function	Data
151	Paper Feed Timing (1st tray) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the upper paper tray (Type 3 only). <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 9: 36 mm 10: 37 mm 11: 38 mm -- 24: 51 mm
152	Paper Feed Timing (2nd~5th tray) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the lower paper tray or the paper tray unit. <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 6: 33 mm 7: 34 mm 8: 35 mm -- 24: 51 mm
153	Paper Feed Timing (Duplex) <input type="checkbox"/>	Adjusts the registration paper buckle amount for the paper fed from the duplex tray. <i>(The data value is the approximate distance that the paper is fed after the lead edge is detected by the registration sensor.)</i>	0: 27 mm -- 14: 41 mm 15: 42 mm 16: 43 mm -- 24: 51 mm
154	Single Duplex Reverse Timing <input type="checkbox"/>	Adjusts the switch-back timing of paper in the duplex tray in single 2-sided copying. <i>(The smaller the data is, the earlier the switch-back timing becomes.)</i>	0: -4 mm -- 3: -1 mm 4: 5: +1 mm -- 8: +4 mm
157	Trail Edge Erase <input type="checkbox"/>	Adjusts the trail edge erase start timing. <i>(When the default value is selected, the trail edge erase starts 2mm after the trail edge of the image.)</i>	0: -6 mm -- 11: -0.5 mm 12: 13: +0.5 mm -- 15: 1.5 mm
160	Grid Voltage (Image)	Displays the grid bias voltage for the image area in the three digit indicator. <i>(Grid bias voltage can be changed by using "+" & "--" ["up" & "down"] keys in 5V steps.)</i>	-715 V
161	Grid Voltage (ID sensor pattern)	Displays the grid bias voltage for the ID sensor pattern in the three digit indicator. <i>(Grid bias voltage can be changed by using "+" & "--" ["up" & "down"] keys in 5V steps.)</i>	-480 V
162	T-CH PWM	Displays the PWM value for the high voltage supply board [T] (transfer corona) in the three digit indicator. <i>(The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys in 1 step.)</i>	
163	D-CH (AC) PWM	Displays the PWM value for the high voltage supply board [D-ac] (separation ac corona) in the three digit indicator. <i>(The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys.)</i>	

Mode No.		Function	Data
164	D-CH (DC) PWM	Displays the high voltage supply board [D- dc] (separation dc corona) in the three digit indicator. <i>(The PWM value can be changed by using "+" & "--" ["up" & "down"] keys.)</i>	
165	ID-sensor PWM/Output Check	Displays the ID sensor output in the three digit indicator. <i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the ID sensor is displayed. Hold down the start key to display the ID sensor output voltage. The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys.)</i>	
166	V-Sensor PWM/Output Check	Displays the V sensor output in the three digit indicator. <i>(When entering this mode by pressing the "#" key, the adjusted PWM value for the V sensor is displayed. Hold down the start key to display the V sensor output voltage. The PWM value can be changed by using the "+" & "--" ["up" & "down"] keys.)</i>	
167	ADS Gain/Output Check	Displays the ADS sensor output in the three digit counter. <i>(When entering this mode by pressing the "#" key, the adjusted gain data for the ADS sensor is displayed. Hold down the start key to display the ADS sensor output voltage. Do not hold down the start key too long [about 20 sec], otherwise E12 comes up. Gain data can be changed by using the "+" & "--" ["up" & "down"] keys.)</i>	

4.3 SP-8 SENSOR/SWITCH/SIGNAL DATA CHECK

- How to check sensor/switch/signal -

- 1. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch in order to access the SP mode.

NOTE: Release the number keys after confirming that the ADS indicator and the copy counter number "0" are blinking.

- 2. Enter 8 and then press the "#" key.
- 3. Enter the desired input number using the number keys and press the "#" key.

NOTE: The input number entered is displayed in the three digit indicator.

- 4. Enter the number of copies in the copy counter and press the start key if you want to check the input data during the copy cycle.

NOTE: The on/off status can also be checked manually.

- 5. The data ("0" or "1") will be displayed in the three digit indicator.
- 6. To check input data for another sensor, switch, or signal, press the "#" key twice and repeat from step 3.

Input No.	Sensor/Switch/Signal	Data	
		0	1
1	Registration sensor (S11)	Paper not detected	Paper detected
2	Fusing exit sensor(S14)	Paper not detected	Paper detected
4	Upper relay sensor (S10)	Paper not detected	Paper detected
5	Lower relay sensor (S9)	Paper not detected	Paper detected
6	Tray relay sensor - 1 (Paper tray unit) (S9)	Paper not detected	Paper detected
7	Tray relay sensor - 2 (Paper tray unit) (S10)	Paper not detected	Paper detected
8	Tray relay sensor - 3 (Paper tray unit) (S11)	Paper not detected	Paper detected
10	Upper tray set sensor (S2)	Tray set	Tray not set
11	Lower tray set sensor (S3)	Tray set	Tray not set
12	Tray set sensor - 1 (Paper tray unit) (S1)	Tray set	Tray not set
13	Tray set sensor - 2 (Paper tray unit) (S2)	Tray set	Tray not set
14	Tray set sensor - 3 (Paper tray unit) (S3)	Tray set	Tray not set
16	Upper tray upper limit sensor (S7)	Down	Up
17	Lower tray upper limit sensor (S8)	Down	Up

Input No.	Sensor/Switch/Signal	Data	
		0	1
18	Tray upper limit sensor - 1 (Paper tray unit) (S4)	Down	Up
19	Tray upper limit sensor - 2 (Paper tray unit) (S5)	Down	Up
20	Tray upper limit sensor - 3 (Paper tray unit) (S6)	Down	Up
22	Upper tray paper end sensor (S5)	Paper detected	Paper not detected
23	Lower tray paper end sensor (S6)	Paper detected	Paper not detected
24	Paper end sensor - 1 (Paper tray unit) (S7)	Paper detected	Paper not detected
25	Paper end sensor -2 (Paper tray unit)	Paper detected	Paper not detected
26	Paper end sensor - 3 (Paper tray unit) (S8)	Paper detected	Paper not detected
28	LCT paper end sensor (S26)	Paper detected	Paper not detected
29	LCT cover switch (S15)	Cover closed	Cover open
30	LCT down switch (S16)	Off	On
31	LCT lower limit sensor (S27)	Off	On
32	LCT upper limit sensor (S28)	Off	On
34	Sorter bin H.P. sensor	Not at H.P.	At H.P.
35	Sorter bin lift sensor	Off	On
36	Sorter cover switch	Cover open	Cover closed
37	Sorter entrance sensor	Paper not detected	Paper detected
39	By-pass feed table sensor (S1)	Table closed	Table open
40	By-pass feed paper end sensor (S4)	Paper detected	Paper not detected
41	Duplex unit set detection	Off	On
42	Duplex paper end sensor (S24)	Paper not detected	Paper detected
43	Duplex turn gate sensor (S23)	Paper not detected	Paper detected
44	Duplex entrance sensor (S22)	Paper not detected	Paper detected
45	Junction gate sensor (S15)	Paper not detected	Paper detected
47	Platen cover switch (SW11)	Platen cover closed	Platen cover open
48	Scanner H.P. sensor (S16)	Off	On
53	Tray unit door switch (SW13)	Door closed	Door open
54	Exit cover switch (SW10)	Cover open	Cover closed
55	Paper tray unit detection	Tray unit detected	Tray unit not detected
58	Key counter set signal	Not set	Set
59	Total counter micro read switch	Off	On
61	Duplex Jogger motor high temperature signal	Off	On
64	Exposure lamp on signal	Off	On

Input No.	Sensor/Switch/Signal	Data	
		0	1
67	Upper tray paper size switches (SW1 - SW4)	Refer to table 1	Refer to table 1
68	Lower tray paper size switches (SW5 - SW8)		
69	Tray paper size switches - 1 (Paper tray unit) (SW1 - SW4)		
70	Tray paper size switches - 2 (Paper tray unit) (SW5 - SW8)		
71	Tray paper size switches - 3 (Paper tray unit) (SW9 - SW12)		
72	Original length&width sensors (S20 & S21)	Refer to tables 2 and 3	Refer to tables 2 and 3

Table 1

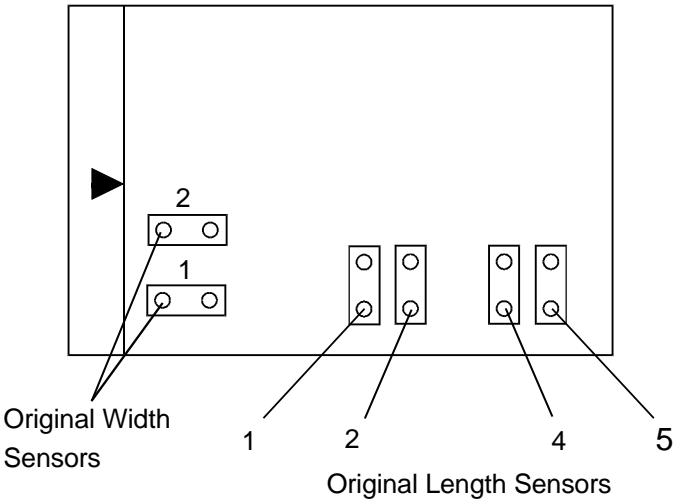
Paper size	Data
A3 / 11" X 17"	1
B4	3
F / 8 1/2" X 14"	2
A4 lengthwise	6
A4 sideways / 8 1/2" X 11" lengthwise	4
B5 lengthwise	12
B5 sideways / 8 1/2" X 11" sideways	8

Table 2

Sensor	Data
Original width 1	1
Original width 2	2
Original length 1	4
Original length 2	8
Original length 3 (A3/A4 type machine only)	10
Original length 4	20
Original length 5	40

Table 3

Original size	Data
A3	7F
11" X 17"	6F
B4	3F
A4 Lengthwise	E
A4 sideways / 8 1/2" X 11" lengthwise	7
B5 lengthwise	6
B5 sideways / 8 1/2" X 11" sideways	3
A5 lengthwise	0
A5 sideways	2
No original	0



4.4 SP-9 ELECTRICAL COMPONENT CHECK

- How to turn electrical component on/off -

1. While pressing both 1 and 3 on the operation panel number keys, turn on the main switch in order to access the SP mode.

NOTE: Release the number keys after confirming that the ADS indicator and the copy counter number "0" are blinking.

2. Enter 9 using the number keys and then press the "#" key.
3. Enter the desired output number using the number keys.

NOTE: The output number entered will blink in the three digit indicator. The two LEDs at each end of the manual ID level indicator will light.

4. Press the start key to turn on the electrical component.

NOTE: When the selected electrical component is active, all the manual ID level LEDs will light.
Pressing the start key while holding down the interrupt key turns on the selected electrical component together with the main motor.

5. Press the Clear/Stop key to turn off the electrical component.

6. To turn on another electrical component, repeat from step 3.

CAUTION:The motors keep turning in this output mode regardless of upper or lower limit sensor signal. Do not keep the electrical component on for a long time to prevent any mechanical or electrical damage.

Output No.	Electrical component
1	Main motor (M1)
2	High voltage supply - Charge corona (PCB7)
3	High voltage supply - Charge corona and grid bias without VR correction (PCB7)
4	High voltage supply - Charge corona and grid bias for ID sensor pattern (PCB7)
5	High voltage supply - Charge corona and grid bias for VR pattern (PCB7)
6	High voltage supply - Charge corona and grid bias for VL pattern (PCB7)
7	High voltage supply - Transfer corona (PCB7)
8	High voltage supply - Separation corona (PCB8)
9	High voltage supply - Development bias (PCB7)
10	ID sensor LED (S12)
11	V sensor LED (S13)
12	Scanner drive motor : Scanner moves forward and returns to the H.P. (M7)
13	Black development unit (NOTE)

Output No.	Electrical component
15	Development drive clutch (MC1)
16	Toner supply clutch (MC2)
17	Pre-transfer lamp (L2)
19	Erase lamp unit - All blocks (L5)
20	Erase lamp unit - Designated blocks for ID sensor pattern (L5)
21	Erase lamp unit - Designated blocks for VL pattern (L5)
22	Sorter drive motor
23	Sorter bin drive motor : Up (CAUTION)
24	Sorter bin drive motor : Down (CAUTION)
25	Registration clutch (MC5)
27	By-pass feed clutch (MC3)
28	Feed relay clutch (MC4)
29	Tray unit drive clutch (Paper Tray Unit) (MC4)
30	Upper paper feed clutch (MC6)
31	Lower paper feed clutch (MC7)
32	Paper feed clutch - 1 (Paper tray unit) (MC1)
33	Paper feed clutch - 2 (Paper tray unit) (MC2)
34	Paper feed clutch - 3 (Paper tray unit) (MC3)
35	Duplex tray lock solenoid (SOL3)
37	Tray lock solenoid - 1 (Paper tray unit) (SOL1)
38	Tray lock solenoid - 2 (Paper tray unit) (SOL2)
39	Tray lock solenoid - 3 (Paper tray unit) (SOL3)
40	Pick-up solenoid (SOL2)
41	Upper tray lift motor : Up (M3)
42	Lower tray lift motor : Up (M4)
43	Tray lift motor - 1 (Paper tray unit) : Up (M1)
44	Tray lift motor - 2 (Paper tray unit) : Up (M2)
45	Tray lift motor - 3 (Paper tray unit) : Up (M3)
46	Upper tray lift motor : Down (M3)
47	Lower tray lift motor : Down (M4)
48	Tray lift motor - 1 (Paper tray unit) : Down (M1)
49	Tray lift motor - 2 (Paper tray unit) : Down (M2)
50	Tray lift motor - 3 (Paper tray unit) : Down (M3)
51	Jogger motor : Set jogger fences at the H.P. (M12)
52	Duplex feed motor : Normal rotation (M11)
53	Duplex feed motor : Reverse rotation (M11)
54	Duplex turn gate solenoid (SOL7)
56	Junction gate solenoid (SOL6)
57	Exhaust blower motor (M2)
58	Fusing exhaust fan motor : High speed (M6)
59	LCT lift motor : Up (M13) (CAUTION)
60	LCT lift motor : Down (M13) (CAUTION)

NOTE :When the start key is pressed, the main motor starts turning. While the "●" key is held down, the development drive and toner supply clutches turn on to supply **black** toner.

4.5 PREVENTIVE MAINTENANCE SCHEDULE

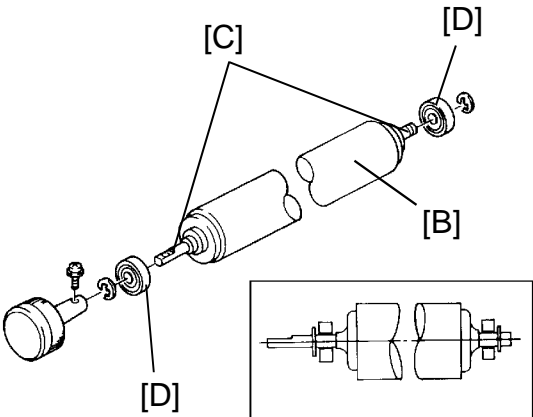
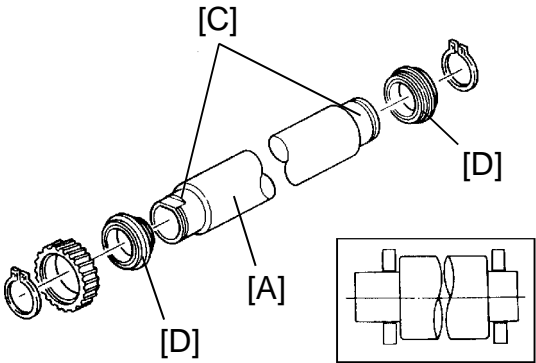
4.5.1 PM TABLE (NOTE)

Note3: Fusing Section

(1)Hot and Pressure Rollers

Replace the hot [A] and pressure [B] rollers every 160K if necessary.

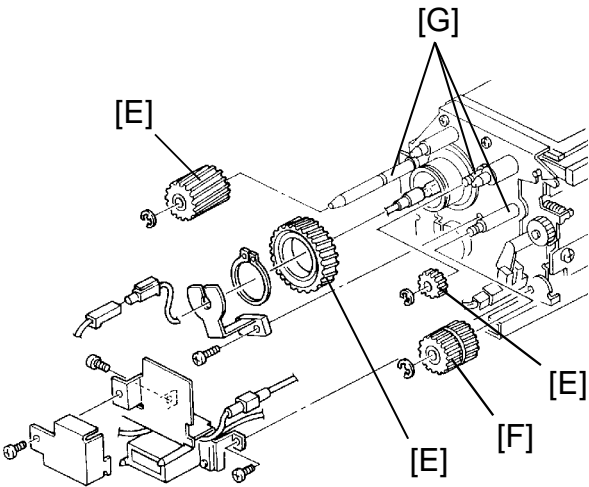
Then, lubricate the roller shaft [C] and bearings [D] with BARRIERTA L55/2 grease.



(2)Fusing Drive Gears

Replace the fusing drive gears [E] every 160K.

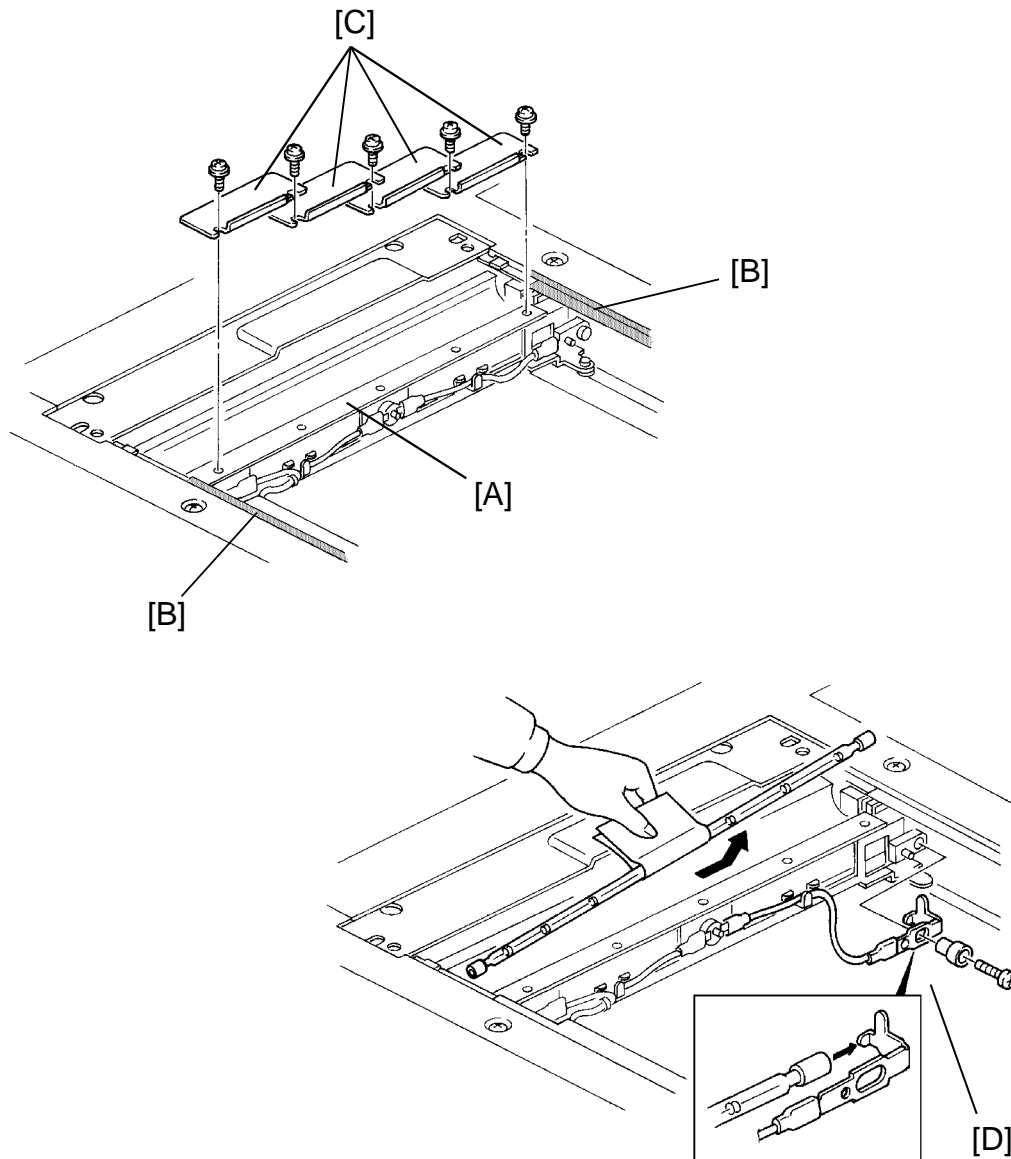
Then, lubricate the gears [E, F] and their shafts [G] with Grease G501.



5. REPLACEMENT AND ADJUSTMENT

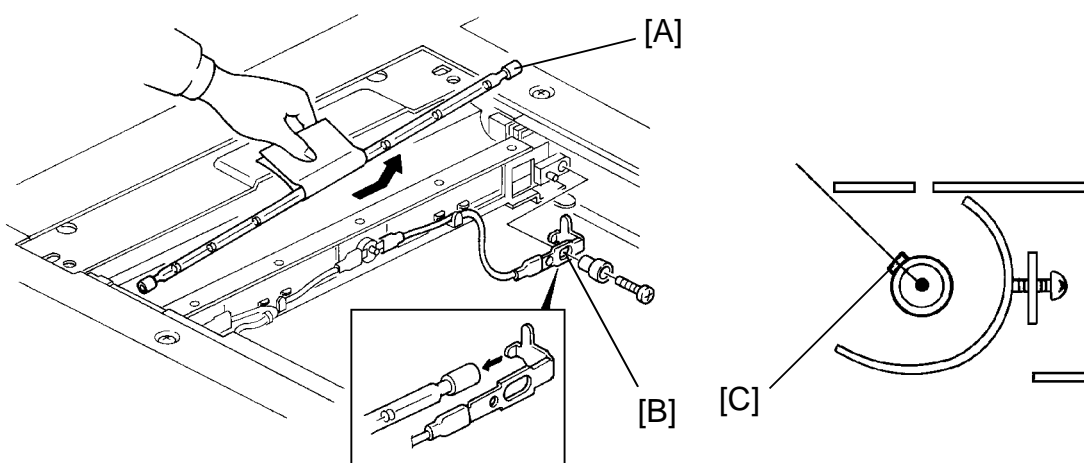
5.1 OPTICS

5.1.1 EXPOSURE LAMP REPLACEMENT



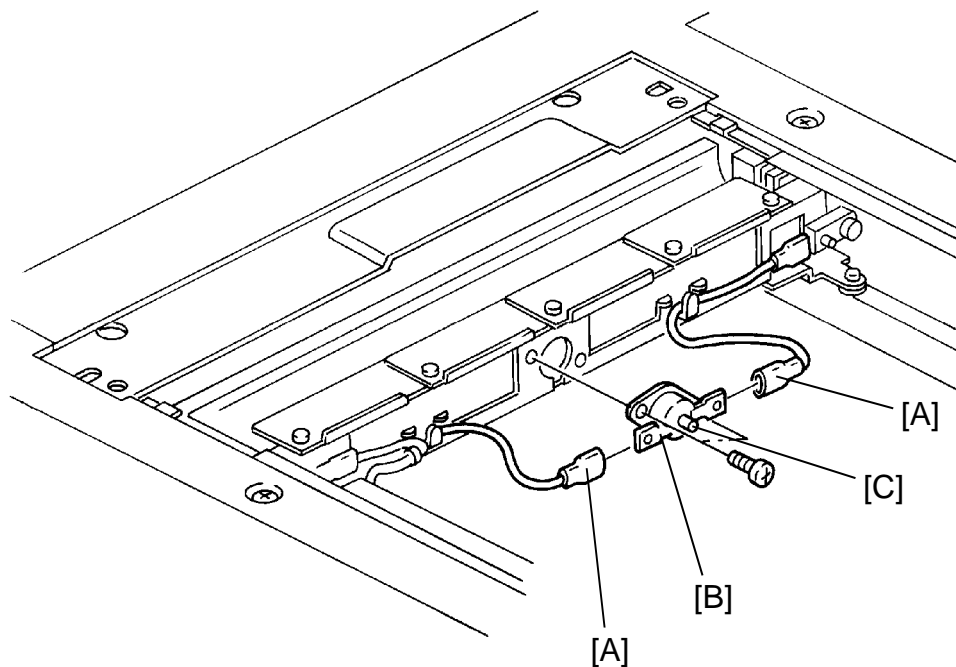
NOTE: Do not touch the reflector or the new exposure lamp with your bare hands. Use a strip of paper as shown. (Oil marks from your fingers on the lamp or reflectors will be affected by heat from the lamp and will cause discoloration.)

1. Turn off the main switch.
2. Remove the exposure glass. (See Exposure Glass Removal.)
3. Move the first scanner [A] to the cutout position at the front and rear frames [B]. (See illustration.)
4. Remove the adjusting plates [C] (loosen 5 screws).
5. Remove the rear terminal bracket [D] (1 screw).



6. Remove the exposure lamp [A] from the front terminal by moving the lamp towards the rear.
7. Install a new lamp. Use a strip of paper to hold the lamp as shown. Reassemble the rear terminal bracket [B].
NOTE: Make sure that the blister [C] on the lamp points towards the reflector opening (left side of the copier) as shown.
8. Reassemble the copier.
9. Check the exposure lamp voltage setting [X] by SP48.
10. Check the target lamp voltage [Y] by SP51 (press the "." key for reading).
11. Perform forced VL detection (SP70) [Y-X] times.
12. Check the target lamp voltage by SP51.
13. Perform forced VL detection (SP70) a few more times.
14. Check the target lamp voltage [Z] by SP51 again and confirm that the voltage [Z] is the same as that in step 12. If not, repeat the forced VL detection (SP70) until the voltage [Z] stabilizes.
15. Perform the auto ADS gain adjustment (SP56).
16. Adjust ADS density (SP34) if necessary.

5.1.2 OPTICS THERMOSWITCH REPLACEMENT

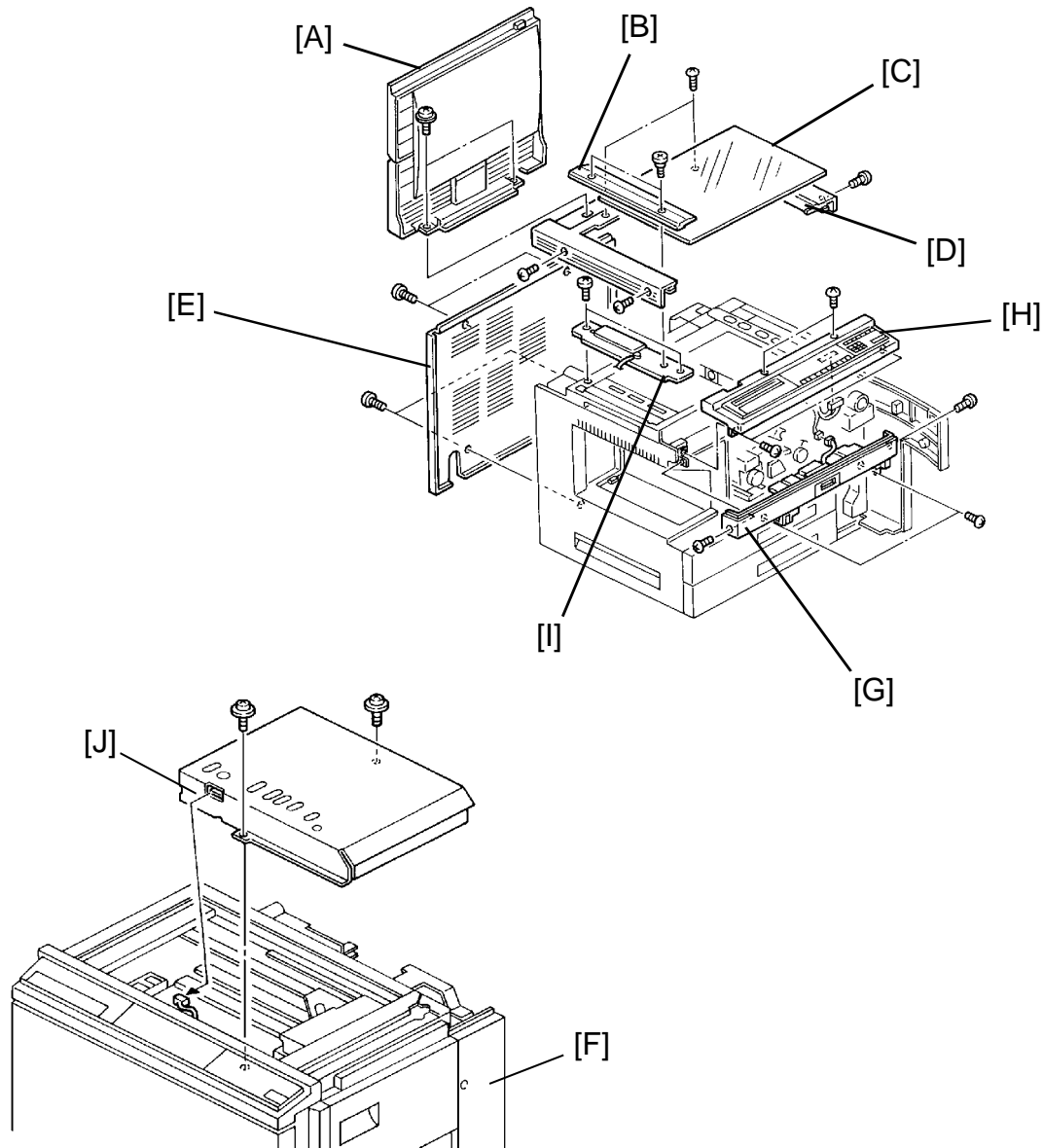


NOTE: The thermoswitch can be reset manually by pushing the red button [C] when the exposure lamp area cools.

1. Turn off the main switch.
2. Remove the exposure glass.
3. Remove the exposure lamp leads [A] from the terminals on both sides of the thermoswitch [B].
4. Remove the thermoswitch from the bracket (2 screws), and replace it.

5.1.3 SCANNER DRIVE BELT REPLACEMENT

5.1.3.1 Belt Removal



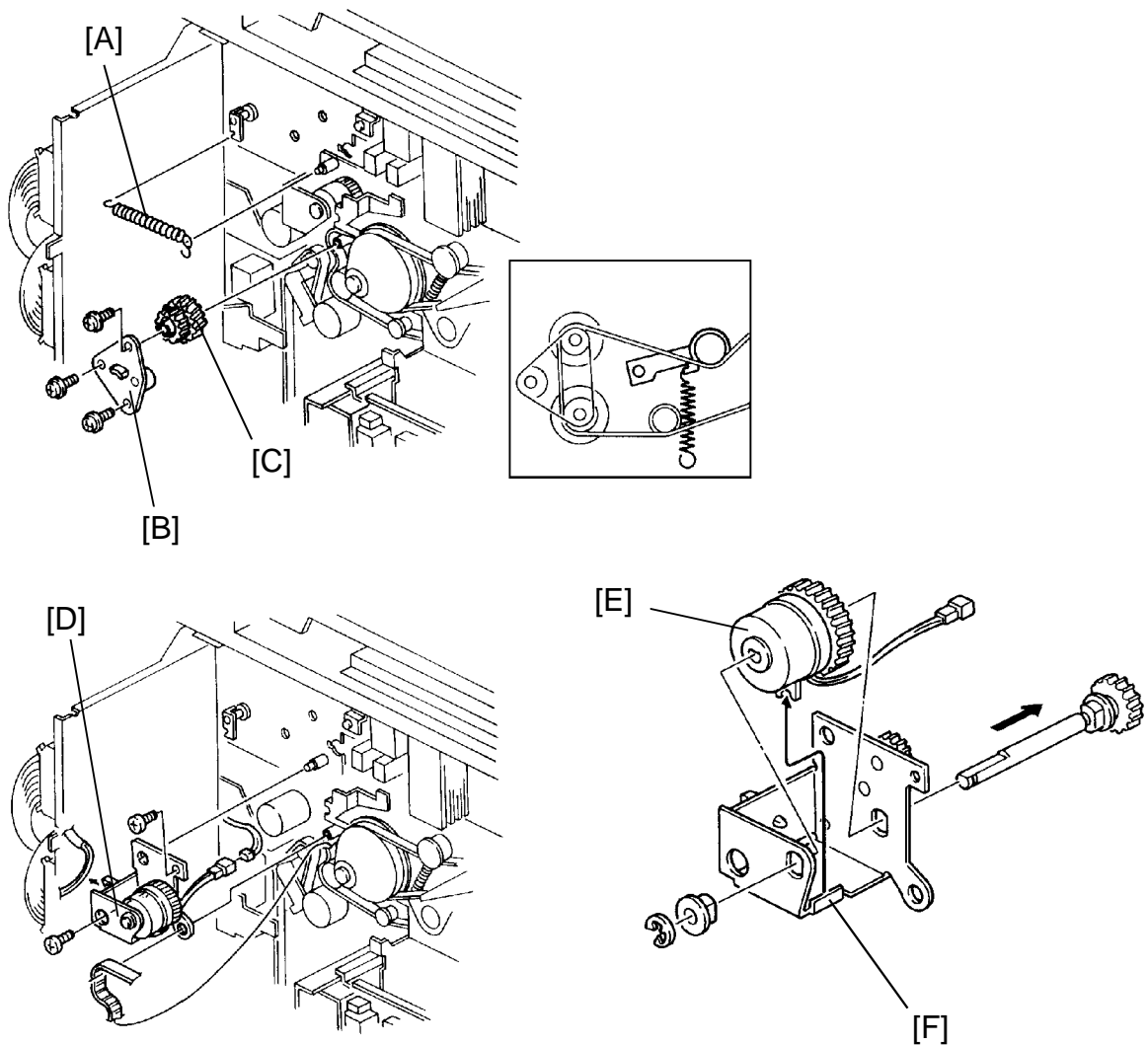
1. Remove the following parts:

- Platen cover or ADF [A]
- Left scale [B] (2 shoulder screws)
- Exposure glass [C]
- Top cover [D] (6 screws)
- Rear cover [E] (loosen 2 screws and remove 2 screws)
- Right upper cover [F] (4 screws)
- Front upper cover [G] (3 screws)
- Operation panel [H] (4 screws and 2 connectors)
- Left scale bracket [I] (2 screws, 1 connector and 1 harness clamp)
- Lens cover [J] (2 screws and 1 connector)

* The rest of procedure is the same as for FT5733/5433.

5.2 TONER SUPPLY

5.2.1 TONER SUPPLY CLUTCH REMOVAL

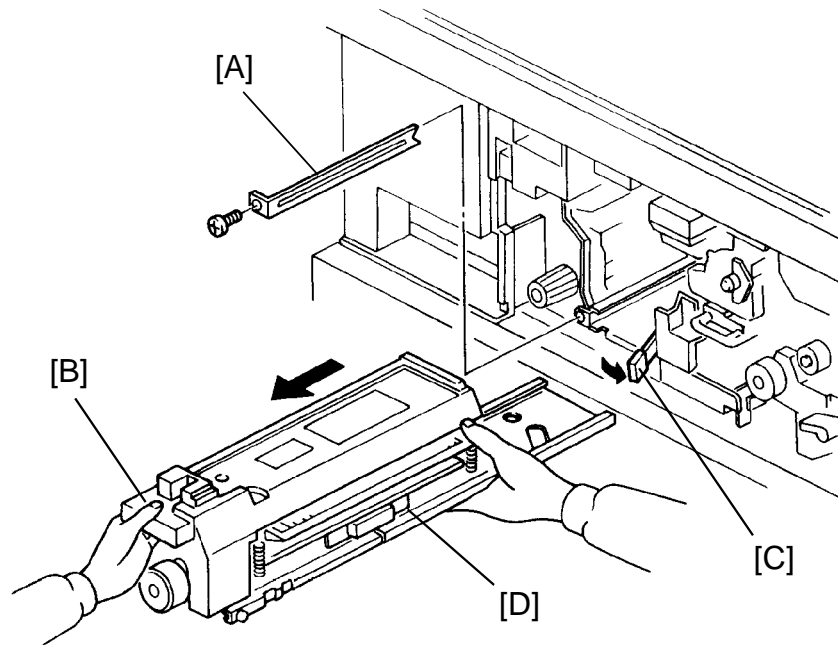


1. Turn off the main switch and remove the rear cover.
2. Swing out the main control board assembly.
3. Remove the tension spring [A].
4. Remove the support bracket [B] (3 screws) and gear [C].
5. Remove the toner supply clutch assembly [D] (2 screws, 1 wire saddle, and 1 connector).
6. Remove the toner supply clutch [E] (1 E-ring).

NOTE: When reinstalling the clutch, make sure that the clutch stopper groove engages with the stopper [F].

5.3 FUSING

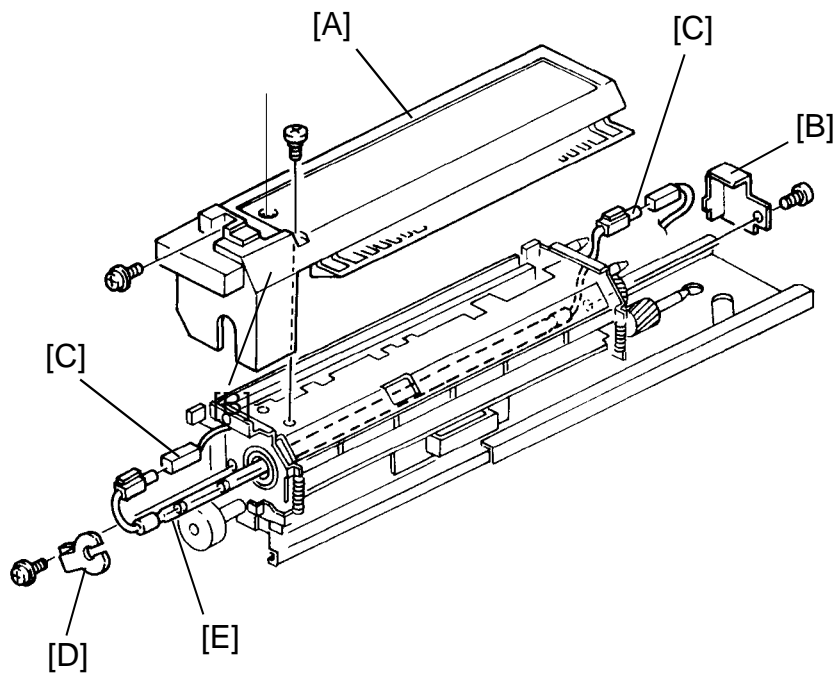
5.3.1 FUSING UNIT REMOVAL



1. .
2. Remove the fusing unit lock plate [A] (1 screw).
3. Hold the fusing unit cover [B] while pushing the release lever [C], and pull out the fusing unit [D] until it stops.
4. Remove the fusing unit completely while pushing the release lever.

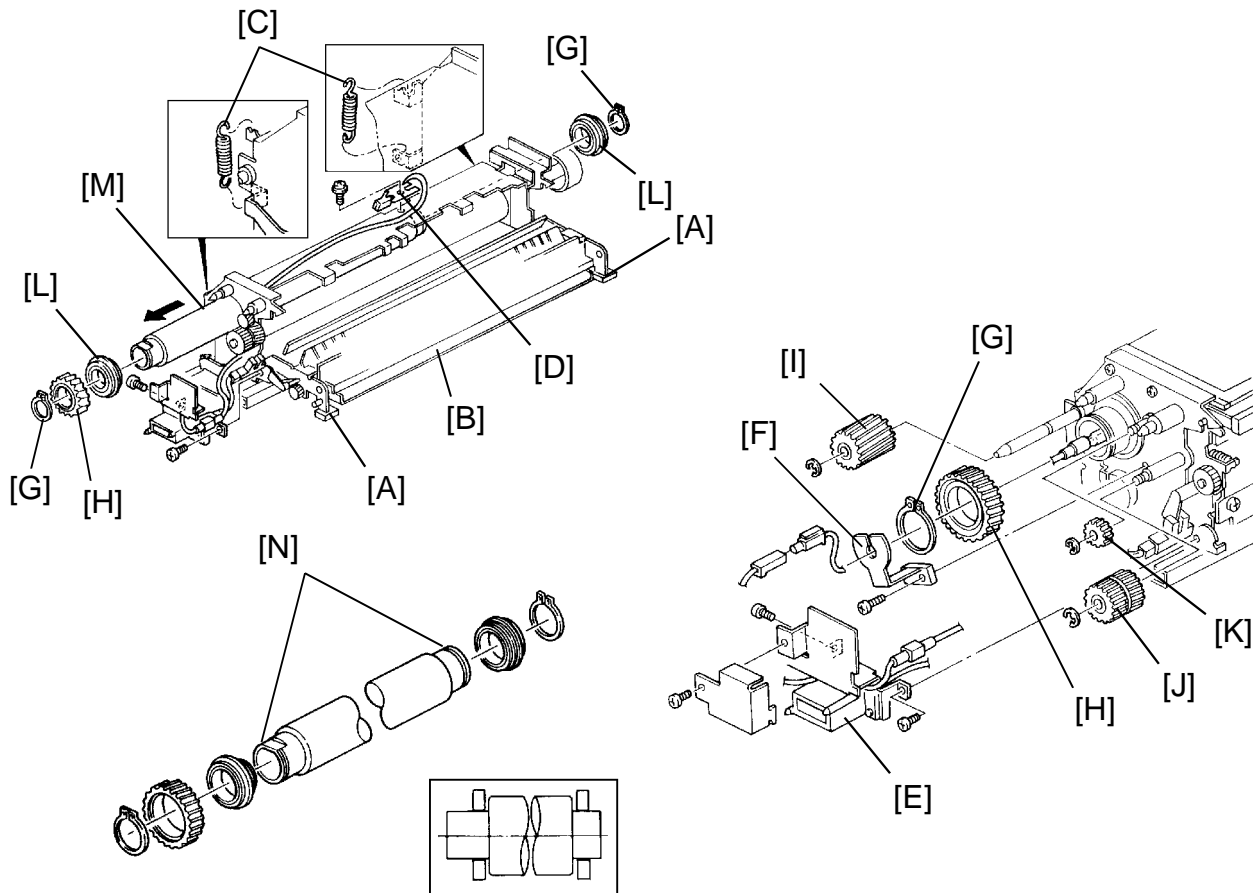
NOTE: Support the bottom of the fusing unit, before removing it completely.

5.3.2 FUSING LAMP REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (2 shoulder screws, 1 screw).
3. Remove the harness cover [B] (1 screw) and disconnect the fusing lamp harness [C] (1 connector each).
4. Remove the front lamp holder [D] (1 screw) and replace the fusing lamp [E].

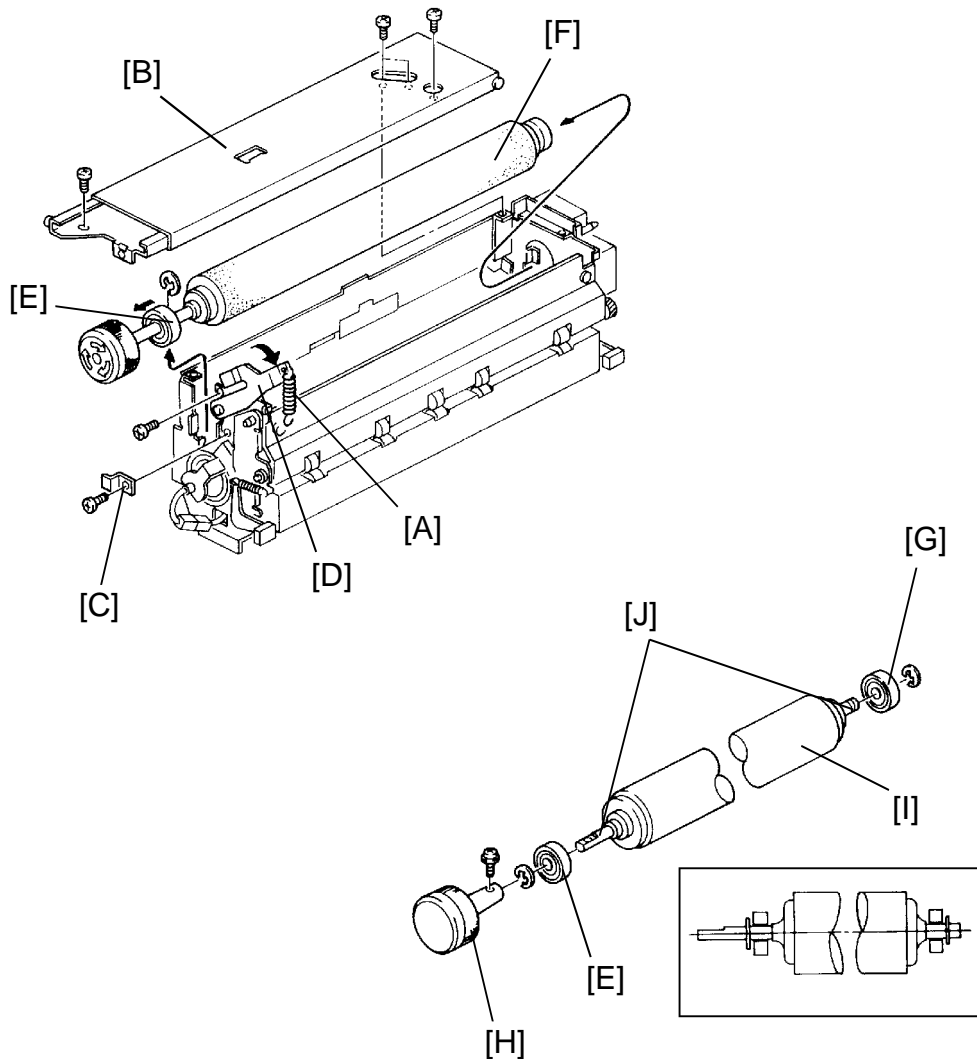
5.3.3 HOT ROLLER REPLACEMENT



1. Remove the fusing lamp (see Fusing Lamp Replacement).
2. Press both release levers [A] and lower the fusing exit assembly [B].
3. Remove the front and rear pressure springs [C].
4. Remove the fusing thermistor [D] (1 screw).
5. Remove the harness bracket [E] (2 screws) and rear heater holder [F] (1 screw).
6. Remove the front and rear C-rings [G], 4 gears [H, I, J, K], front fusing bearings [L], and then remove the hot roller [M].

- NOTE:**
- a) Lubricate the roller shaft [N] with BARRIERTA L55/2 grease.
 - b) Peel off 3 cm (1 inch) from both ends of the protective sheet, and install the hot roller.
 - c) Before setting the pressure springs, remove the rest of the protective sheet.
 - d) Lubricate the fusing drive gears and their shafts with grease G501.

5.3.4 PRESSURE ROLLER REPLACEMENT

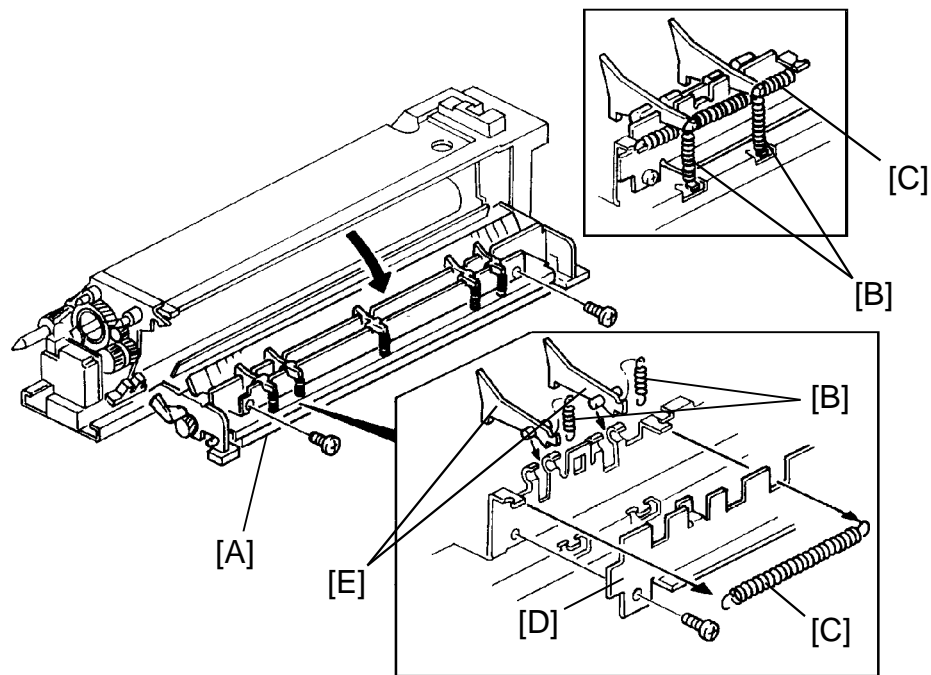


1. Unhook the fusing pressure springs [A].
2. Place the fusing unit up side down.
3. Remove the bottom plate [B] (5 screws).
4. Remove the bearing stopper [C] (1 screw) and swing the pressure arms [D] as shown.
5. Slide the bearing [E] (1 E-ring) to front and remove the pressure roller assembly [F].
6. Remove the rear bearing [G] (1 E-ring) and the fusing knob [H] (1 screw).
7. Replace the pressure roller [I].

NOTE: When installing a new pressure roller:

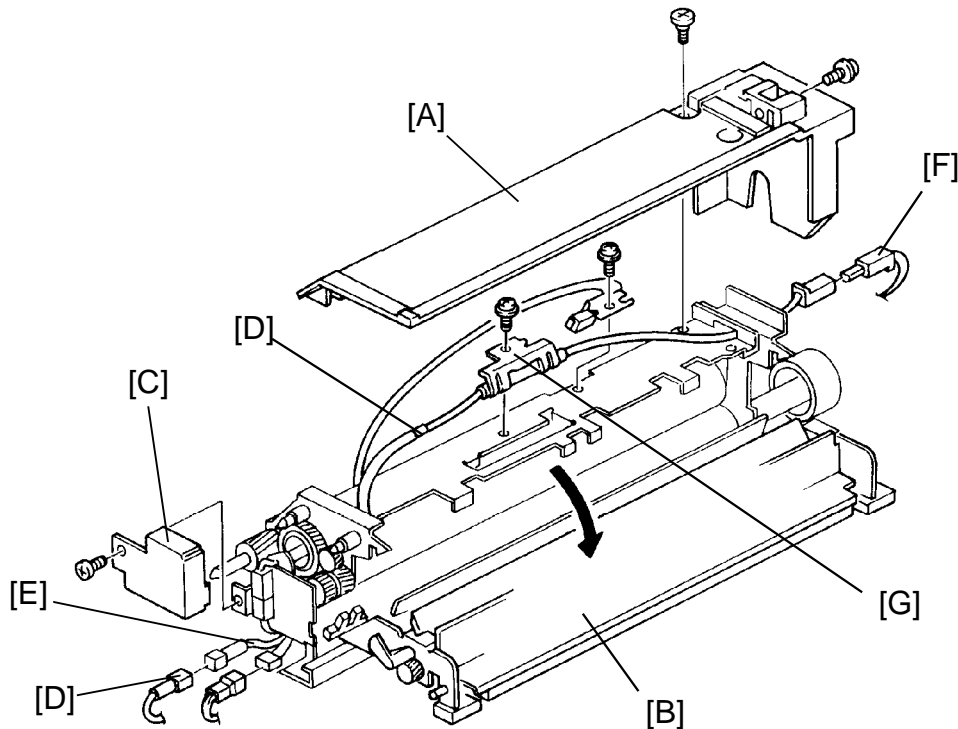
- a) Lubricate the roller shaft [J] and bearings [E, G] with BARRIERTA L55/2 grease.

5.3.5 FUSING STRIPPER PAWL REPLACEMENT



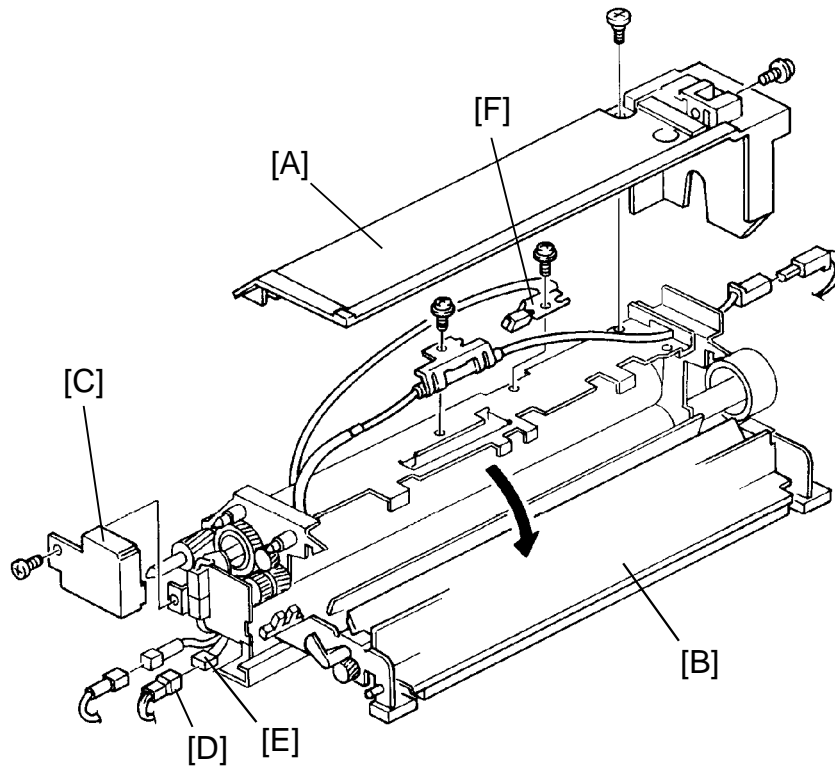
1. Remove the fusing unit (see Fusing Unit Removal).
2. Lower the fusing exit assembly [A].
3. Remove the pawl pressure springs [B] and pawl release springs [C].
4. Remove the fusing pawl bracket [D] (2 screws).
5. Remove the fusing stripper pawls [E] and replace.

5.3.6 THERMOFUSE HARNESS REPLACEMENT



1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (2 shoulder screws, 1 screw).
3. Lower the fusing exit assembly [B], and remove the harness cover [C] (1 screw).
4. Disconnect the thermofuse harness [D] from the fusing harness [E] and the fusing lamp lead [F].
5. Remove the thermofuse holder [G] (1 screw) then remove the thermofuse harness (2 plate clamps).

5.3.7 FUSING THERMISTOR REPLACEMENT

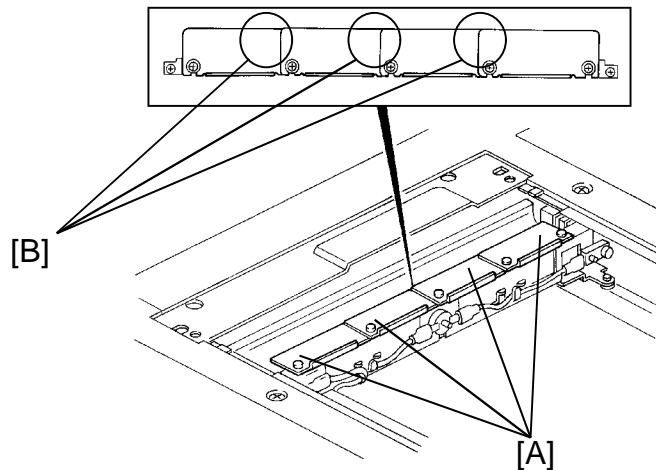


1. Remove the fusing unit (see Fusing Unit Removal).
2. Remove the fusing unit cover [A] (2 shoulder screws, 1 screw).
3. Lower the fusing exit assembly [B], and remove the harness cover [C] (1 screw).
4. Disconnect the thermistor harness [D] from the fusing harness [E].
5. Remove the fusing thermistor [F] (1 screw, 2 plate clamps).

5.4 COPY QUALITY ADJUSTMENT

5.4.1 UNEVEN EXPOSURE ADJUSTMENT

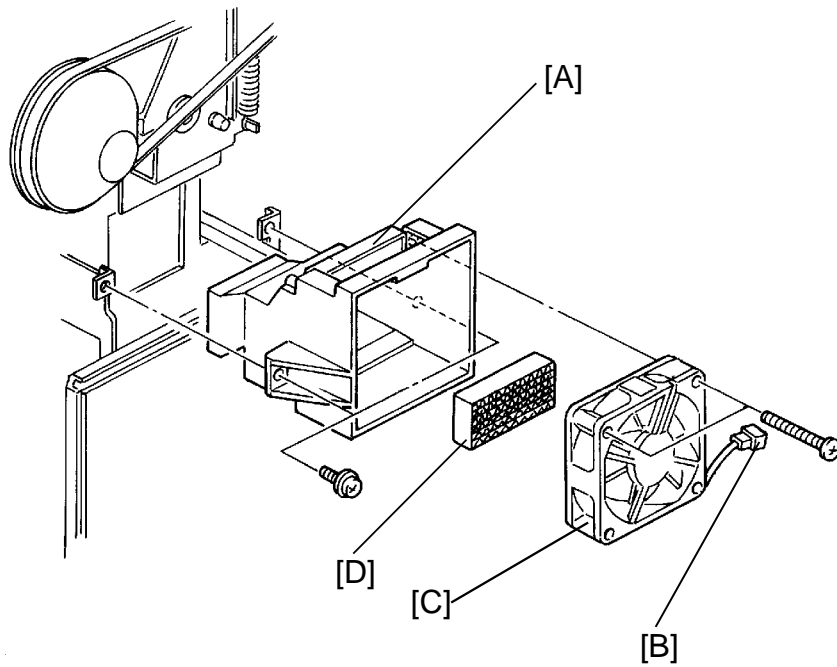
- When: If the exposure is uneven.
- Purpose: To maintain even exposure.
- Adjustment standard: The side-to-side variation of the gray scales on the test chart should be less than one level.
- How: Change the position of the exposure adjusting plates to make the light intensity from the exposure lamp even across its length.



- NOTE:**
- Do not adjust the charge corona wire height to correct uneven image density on the copy. Otherwise, the total charge corona current will change, causing incorrect toner density control.
 - Adjust the side-to-side light intensity based on the intensity at the rear side to maintain proper VL correction.
 - If it is necessary to adjust light intensity at the rear, do it before VL initial detection (before exiting SP mode and after performing SP66).
1. Clean the optics components and the charge corona wire.
 2. Place a test chart on the exposure glass and make an 11" x 17" copy.
 3. If the side-to-side variations of the gray scales are not within the adjustment standard, turn off the main switch and remove the exposure glass (see Exposure Glass Removal).
 4. Position the adjusting plates [A] so that the copy image meets the adjustment standard. The leading edges [B] of the four adjusting plates must be aligned to avoid white streaks.

5.5 OTHERS

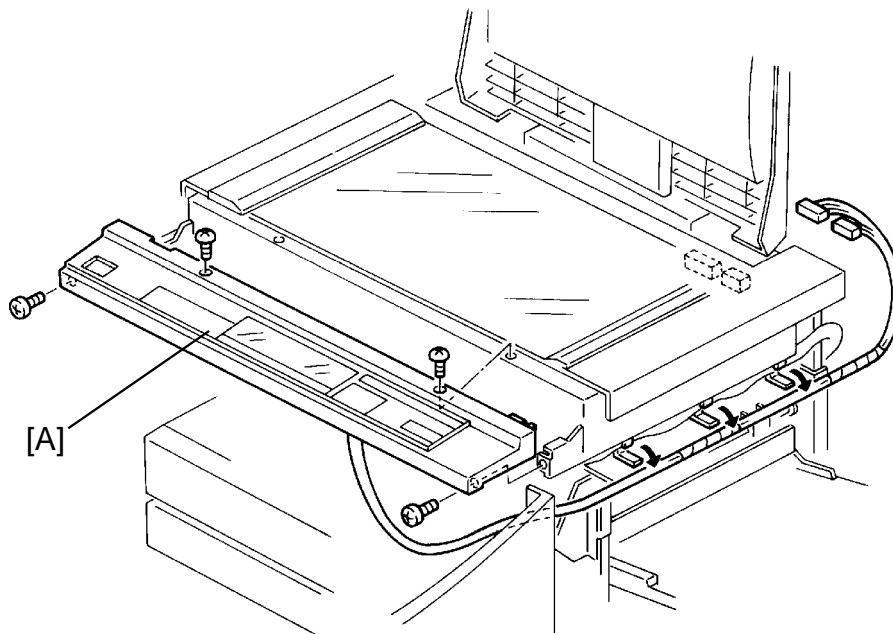
5.5.1 EXHAUST BLOWER FILTER (OZONE FILTER) REPLACEMENT



1. Turn off the main switch.
2. Remove the rear cover.
3. Swing out the dc power supply board.
4. Unhook the high voltage cables from the vacuum fan bracket [A] and disconnect the vacuum fan harness [B] (1 connector).
5. Remove the vacuum fan bracket (2 screws).
6. Remove the vacuum fan [C] (2 screws).
7. Replace the ozone filter [D].

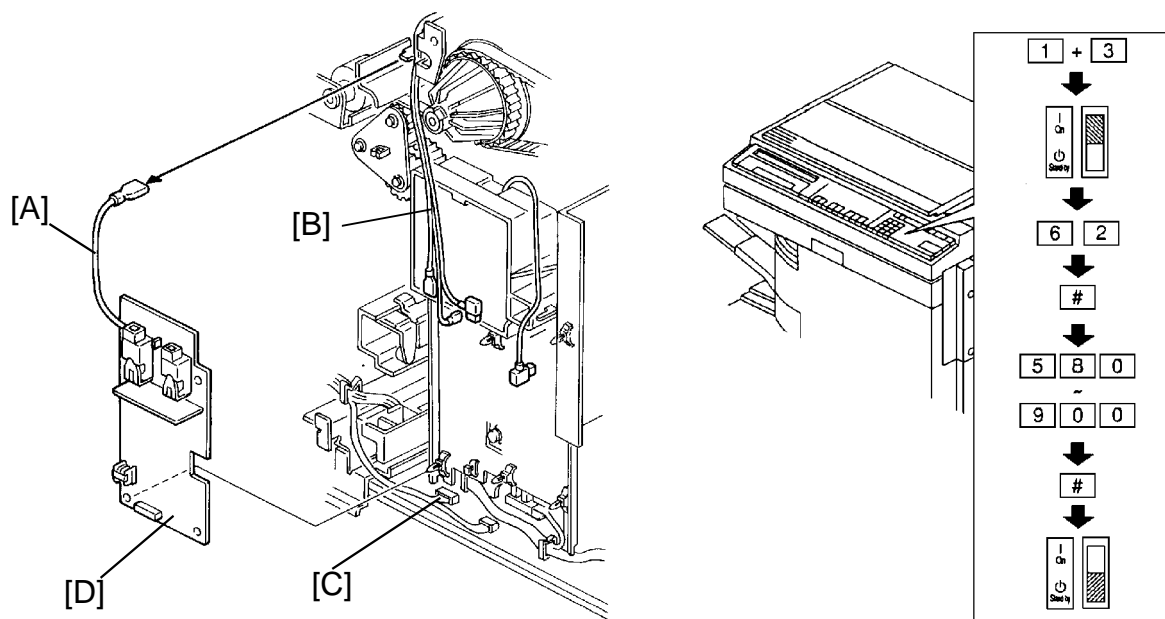
NOTE: The PM interval of this ceramic ozone filter is 400K copies.

5.5.2 OPERATION PANEL REMOVAL



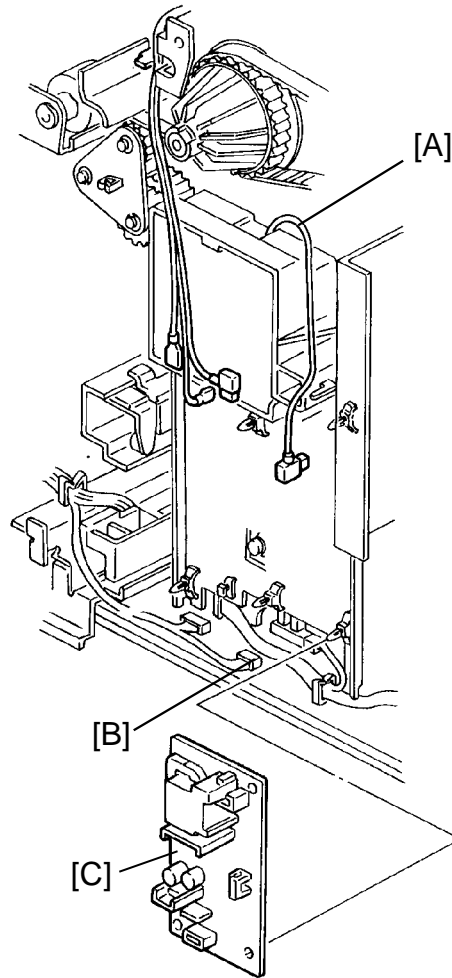
1. Remove the rear cover, right upper cover and front upper cover.
2. Remove the operation panel [A] (4 screws and 2 connectors).

5.5.3 HIGH VOLTAGE SUPPLY BOARD - CTBG REPLACEMENT



1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Swing out the main control board assembly (1 screw).
4. Disconnect the bias cable [A] (1 connector, 2 harness clamps).
5. Disconnect the 3 high-voltage cables [B] and the harness [C].
6. Replace the high voltage supply board - CTBG power pack [D] (3 locking supports).
7. Reassemble the machine.
8. Plug in the power cord.
9. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch in order to access the SP mode.
NOTE: Release the number keys after confirming that the ADS indicator and the copy counter number "0" are blinking.
10. Enter "62" (grid voltage setting mode) using the number keys and press the enter key.
11. Enter the new grid voltage correction data labeled on the board using the number keys and press the enter key.
12. Adjust the transfer corona current.
 (See Transfer and Separation Corona Current Adjustment.)

5.5.4 HIGH VOLTAGE SUPPLY BOARD – D REPLACEMENT



1. Turn off the main switch and unplug the power cord.
2. Remove the rear cover.
3. Disconnect the high-voltage cable [A] and the harness [B] (2 connectors).
4. Replace the high voltage supply board – D [C] (3 locking supports).
5. Adjust the separation corona current.
(See Transfer and Separation Corona Current Adjustment.)

5.5.5 TRANSFER AND SEPARATION CORONA CURRENT ADJUSTMENT

NOTE: A) The transfer corona current adjustment will be required only when the high voltage supply board - CTBG is replaced.

B) The separation corona current adjustment will be required only when the high voltage supply board - D is replaced.

The corona current varies with environmental conditions such as humidity and atmospheric pressure. The corona current is adjusted at the factory and is suitable under a wide range of environmental conditions.

**CAUTION: Make sure that SP9 (output mode) is not active before you change the range on the digital multimeter. If SP9 is active, the multimeter may be damaged.
Be careful as high voltage is applied to the corona wires.**

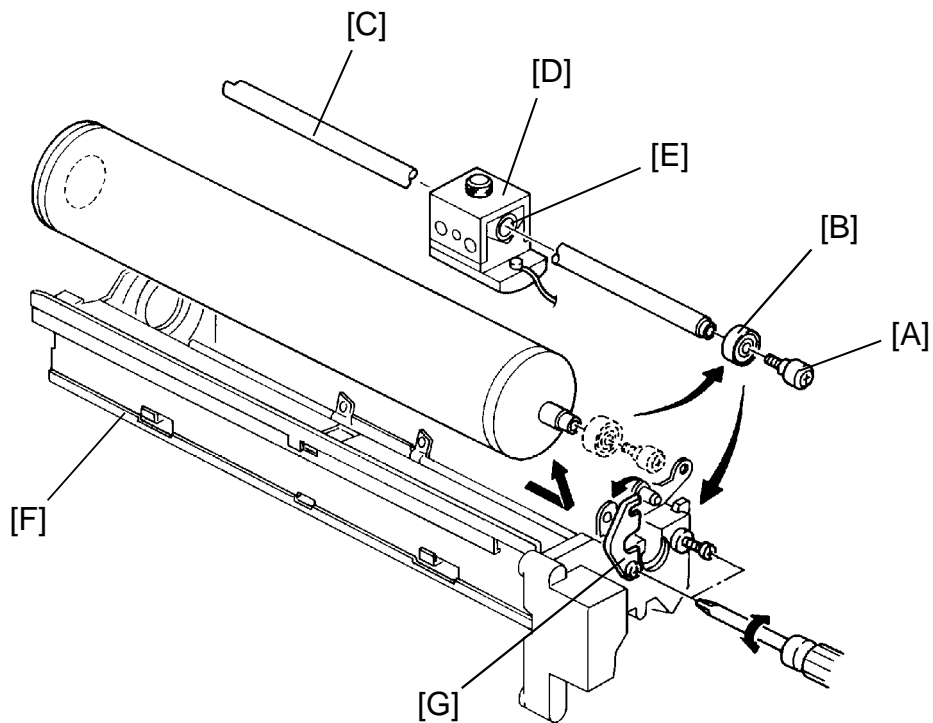
[Special Tools]

The following special tools are required for the transfer and separation corona current adjustment.

- P/N A0069105 Drum shoe shaft
- P/N 54429106 Drum shoe
- P/N 54479104 Shoe adapter
- P/N 54209507 Digital multimeter

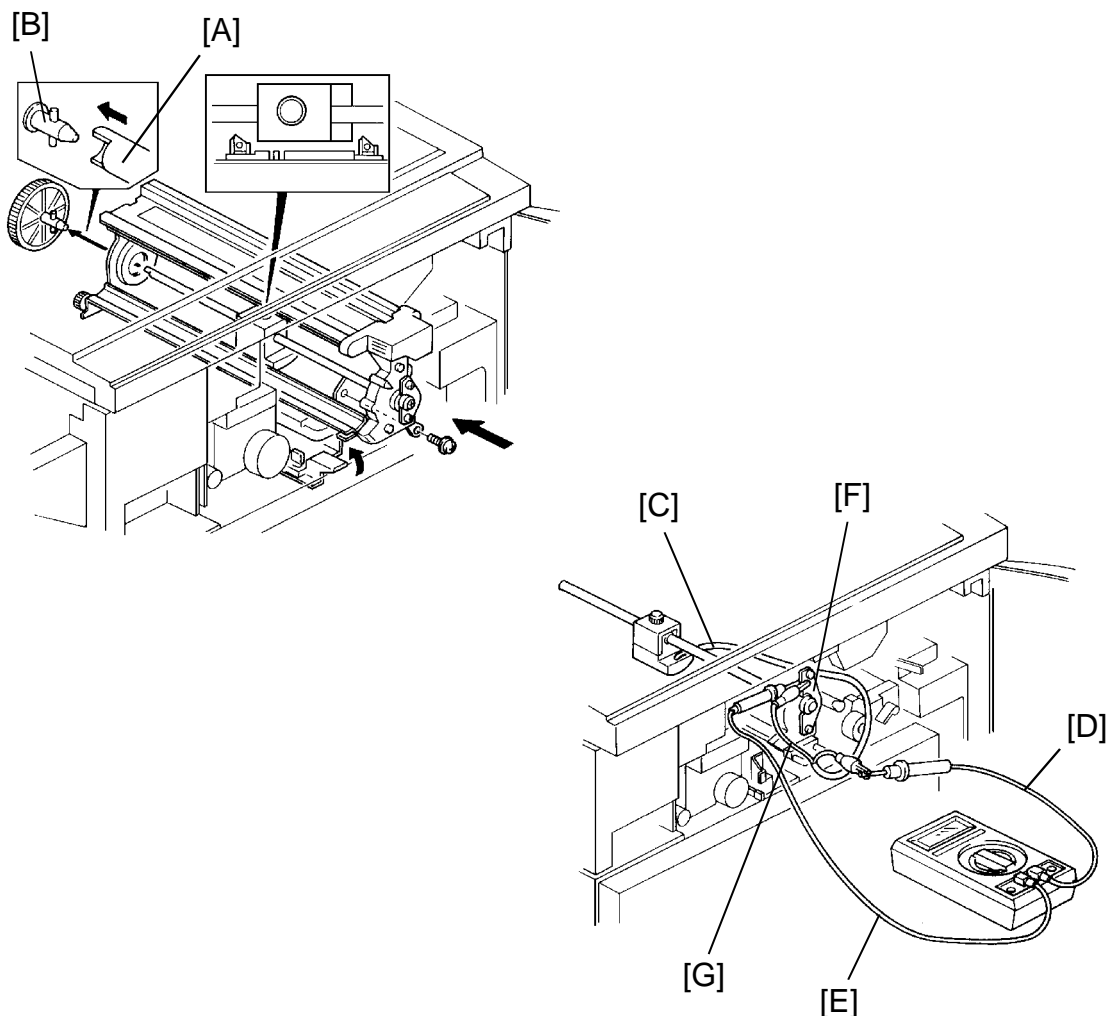
[Preparation]

1. Turn off the main switch and remove the following parts:
Development unit
Cleaning unit
Charge corona unit
Drum unit
T&S corona unit
2. Clean the T&S corona unit with water or alcohol and replace the transfer and separation corona wires with new ones.
3. Remove the drum from the drum unit (see Drum Replacement).
Cover the drum with a shielding sleeve.



4. Remove the bearing screw [A] and the bearing [B] from the drum, then install them on the drum shaft [C].
5. Install the drum shoe [D] and the shoe adapter at [E] the middle of the drum shaft.
6. Install the drum shaft on the drum unit [F] as shown and secure the bearing holder [G] (2 screws).

NOTE: Be careful not to injure your hand on the edge of the pick-off pawls.



7. Install the drum unit in the copier while connecting the rear end of the drum shaft [A] with the drum drive shaft [B] as shown.

8. Secure the drum unit with a screw and run the drum shoe harness [C] through the development unit cavity.

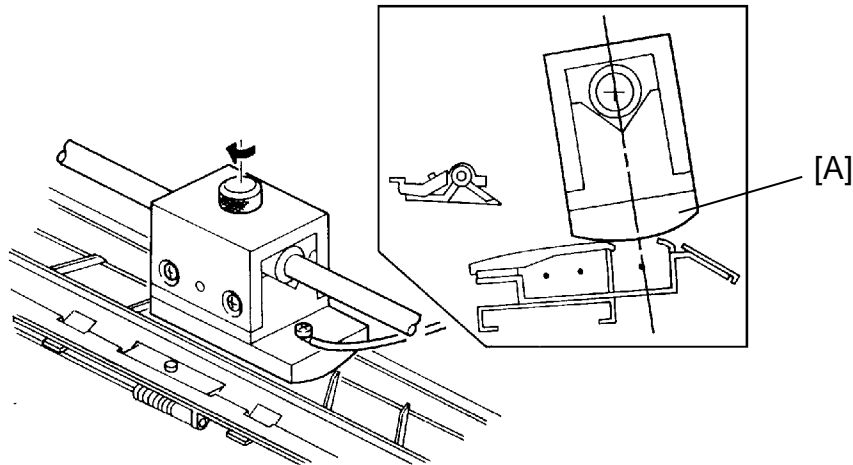
9. Connect the digital multimeter and shoe adapter leads as follows:

- | | |
|--------------------------------|------------------------------------------------------------------------------------------------|
| Positive multimeter lead [D] : | Current terminal "A" of the multimeter and the positive lead of the drum shoe |
| Negative multimeter lead [E]: | Common terminal "COM" of the multimeter and the bearing holder [F] |
| Negative drum shoe lead [G]: | Bearing holder (ensuring the contact with the negative multimeter lead and the bearing holder) |

10. Reinstall the T&S corona unit and actuate the front door safety switch.

[Transfer Corona Current Adjustment]

- A) The transfer corona current adjustment will be required only when the high voltage supply board - CTBG is replaced.



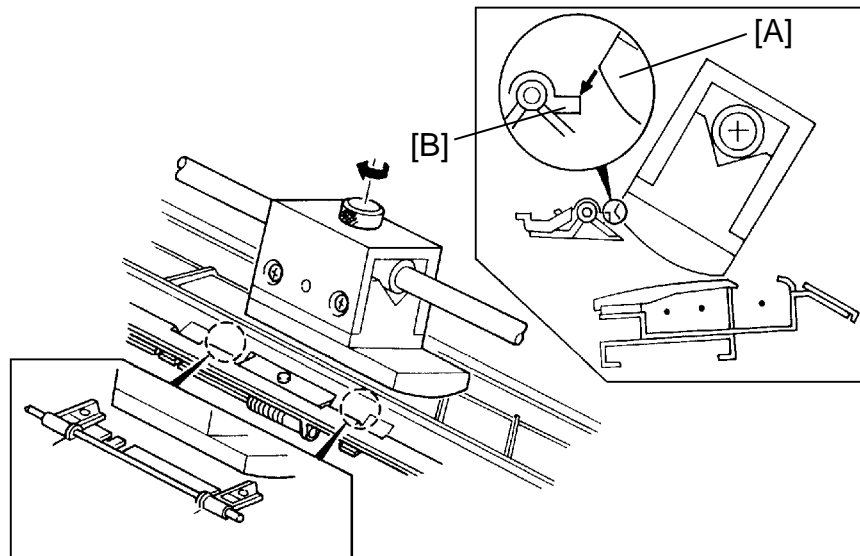
Adjustment standard: $-19.5 \pm 0.5 \mu\text{A}$

1. Position the drum shoe at the center of the drum shaft so that the axis of the current sensing plate [A] is aligned with the transfer corona wire as shown.
2. Select the "dc" 200 μA range on the digital multimeter.
3. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch to access the SP mode.
4. Enter "9" (output check) using the number key and then press the enter key.
5. Enter "7" (high voltage supply - transfer corona); "7" will blink in the three digit indicator.
6. Press the start key and read the transfer corona current on the digital multimeter when it is stabilized.
7. Press the clear/stop key, to turn off the transfer corona current, then the enter key.

8. If the transfer corona current is out of the adjustment standard, do the following steps.
9. Enter "162" (T-CH PWM) by using the number keys, then press the enter key.
10. Change the PWM value displayed in the three digit indicator by using the number keys as follows:
To increase the corona current (absolute value): increase the PWM value.
To decrease the corona current (absolute value): decrease the PWM value.
NOTE: You may use the following rule as reference:
Changing the PWM value by 16 will change the transfer corona current by about 1 μ A.
11. Press the enter key.
12. Repeat steps 4 to 11 until the proper transfer corona current is obtained.
13. Turn off the main switch.

[Separation Corona Current Adjustment]

- B) The separation corona current adjustment will be required only when the high voltage supply board - D is replaced.



Adjustment standard: **ac $46.0 \pm 1.2 \mu\text{A}$**
 dc $+6.3 \pm 0.8 \mu\text{A}$

1. Position the drum shoe at the center (between the pick-off pawls) of the drum shaft so that the upper edge [A] of the current sensing plate is aligned with the pick-off pawl bracket [B] as shown.
2. Select the "ac" 200 μA range on the digital multimeter.
3. While pressing both "1" and "3" on the operation panel number keys, turn on the main switch to access the SP mode.
4. Enter "9" (output check) using the number key, and then press the enter key.
5. Enter "8" (high voltage supply - separation corona); "8" will blink in the three digit indicator.
6. Press the start key and read the separation ac corona current on the digital multimeter when it is stabilized.
7. Press the clear/stop key to turn off the separation corona current, then the enter key.
8. If the separation ac corona current is out of the adjustment standard, do the following steps.
9. Enter "163" (D-CH(AC) PWM) by using the number keys, then press the enter key.
10. Change the PWM value displayed in the three digit indicator by using the number keys as follows:
To increase the corona current (absolute value): increase the PWM value.

To decrease the corona current (absolute value): decrease the PWM value.

NOTE: You may use the following rule as reference:

Changing the PWM value by 6 will change the separation ac corona current by about 1 μ A.

11. Press the enter key.
12. Repeat steps 4 to 11 until the proper separation ac corona current is obtained.
13. Select the "dc" 200 μ A range on the digital multimeter.
14. Enter "9" (output check) using the number key and then press the enter key.
15. Enter "8" (high voltage supply - separation corona); "8" will blink in the three digit indicator.
16. Press the start key and read the separation dc corona current on the digital multimeter when it is stabilized.
17. Press the clear/stop key to turn off the separation corona current, then the enter key.
18. If the separation dc corona current is out of the adjustment standard, do the following steps.
19. Enter "164" (D-CH(DC) PWM) by using the number keys then press the enter key.
20. Change the PWM value displayed in the three digit indicator by using the number keys as follows:
To increase the corona current (absolute value): increase the PWM value.
To decrease the corona current (absolute value): decrease the PWM value.

NOTE: You may use the following rule as reference:

Changing the PWM value by 100 will change the separation dc corona current by about 1 μ A.

21. Press the enter key.
22. Repeat steps 14 to 21 until the proper separation dc corona current is obtained.
23. Check the separation ac corona current again, by repeating steps 2 to 7, to make sure that it is still within the adjustment standard.
24. Turn off the main switch.

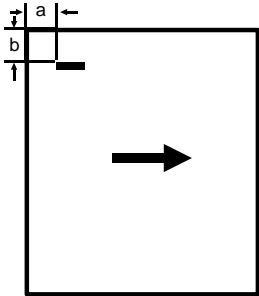
SECTION 14

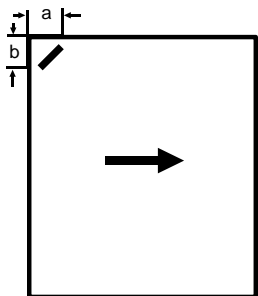
SORTER STAPLER

(ST24)

1. SPECIFICATIONS

Paper Size for Bins:	Sort or stack mode: Maximum: 11" x 17" Minimum: 8 1/2" x 11"
	Staple mode: Maximum: 11" x 17" Minimum: 8 1/2" x 11"
Paper Weight for Bins:	Sort or stack mode: 14 - 25 lb
	Staple mode: 14 - 21 lb
Number of Bins:	20 bins + proof tray
Bin Capacity:	Sort mode: 30 sheets 8 1/2" x 11" 15 sheets 11" x 17"
	Stack mode: 15 sheets Proof tray - 100 sheets 14 -- 22 lb - 50 sheets 23 -- 34 lb - 30 sheets 35 -- 42 lb
Stapler Capacity:	From 2 to 20 sheets (20 lb) (2 to 10 sheets when using 11"x17" or 8 1/2"x14")
Stapling Position:	(Horizontal)
	(Diagonal)





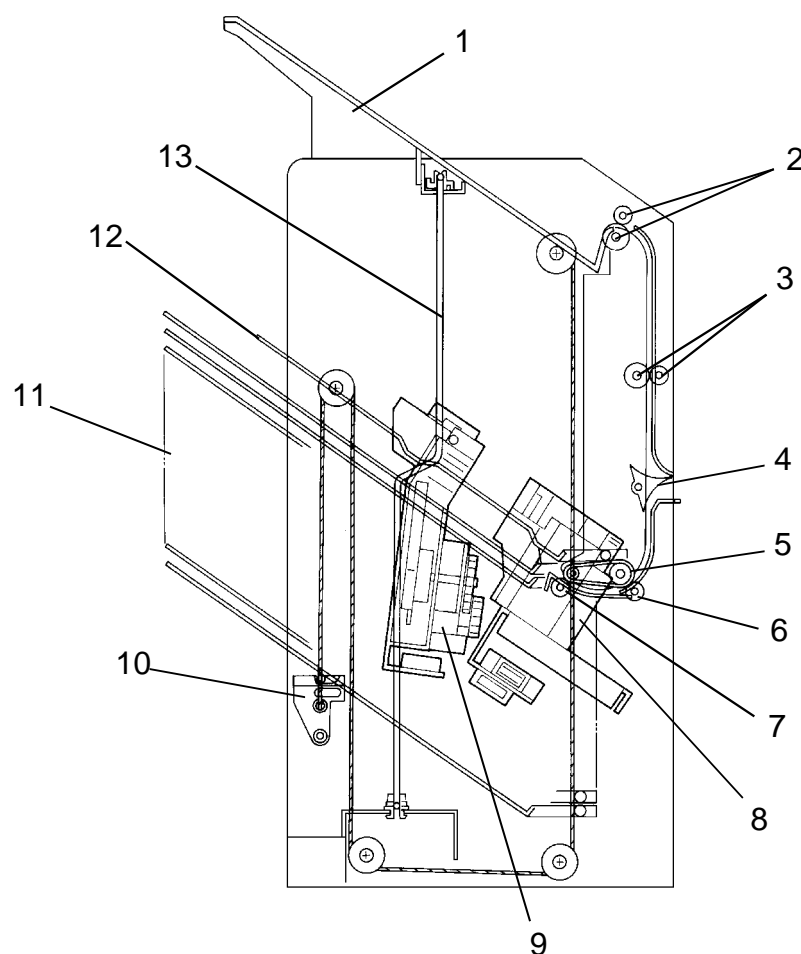
$a = b$
 $= 6 \pm 2 \text{ mm}$
 $= 0.24" \pm 0.08"$

$a = 10 \pm 2 \text{ mm}$
 $= 0.39" \pm 0.08"$
 $b = 16 \pm 2 \text{ mm}$
 $= 0.63" \pm 0.08"$

Staple Replenishment:	Cartridge exchange (3,000 pieces/cartridge)
Power Source:	DC 24V, 5V (from the copier)
Power Consumption:	50 W
Dimensions: (W x D x H)	412 x 600 x 690 mm 16.2" x 23.6" x 27.1"
Weight:	About 55.1 lb (Main Frame : 48.5 lb Mounting Frame: 6.6)

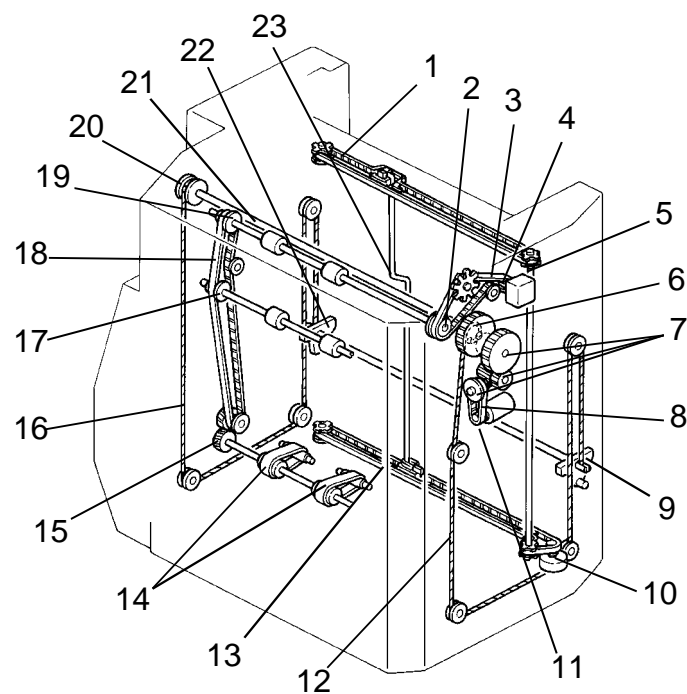
2. COMPONENT LAYOUT

2.1 MECHANICAL COMPONENT LAYOUT



- | | |
|-------------------------------|-----------------------|
| 1. Proof Tray | 10. Bin Support Block |
| 2. Proof Tray Exit Rollers | 11. Bins |
| 3. Vertical Transport Rollers | 12. Support Bin |
| 4. Turn Gate | 13. Jogger Bar |
| 5. Bin Transport Belt | |
| 6. Bin Transport roller | |
| 7. Bin Exit Roller | |
| 8. Stapler | |
| 9. Grip Assembly | |

2.2 DRIVE LAY OUT



- | | |
|-------------------------------------------|-----------------------------------------------|
| 4. Roller Drive Motor Pulley | 11. Bin Lift Motor Pulley |
| 3. Rear Roller Drive Belt | 8. Bin Lift Drive Belt |
| 2. Proof Tray Exit Roller Pulley (Rear) | 7. Bin Lift Gears |
| (Proof Tray Exit Roller) | 6. Bin Lift Gear/Pulley — 21. Bin Drive Shaft |
| 19. Proof Tray Exit Roller Pulley (Front) | 20. Front Bin Lift Pully |
| 12. Rear Bin Lift Wire | 16. Front Bin Lift Wire |
| 13. Rear Bin Support Block | 22. Front Bin Support Block |
| 17. Vertical Transport Drive Pulley | 10. Jogger Motor Pulley |
| 15. Bin Transport Drive Gear | 13. Lower Jogger Drive Belt |
| 14. Bin Transport Belts | 5. Jogger Drive Shaft |
| | 1. Upper Jogger Drive Belt |
| | 23. Jogger Bar |

2.3 ELECTRICAL COMPONENT DESCRIPTION

Refer to the electrical component layout on the reverse side of the Point to Point (Water proof paper) for symbols and index numbers.

Symbol	Name	Function	Index No.
Motors			
M1	Bin Lift	Lifts and lowers the bins via a belt, gears, and wires.	23
M2	Jogger	Drives the jogger bar to jog the copies against the front side plate.	20
M3	Grip	Drives the grip assembly forward and backward into the bin to grip the copies and bring them to the stapling position.	13
M4	Stapler	Feeds the staples and drives the stapler hammer.	12
M5	Roller Drive	Drives the proof tray exit and vertical transport rollers, and bin transport belts.	1
Circuit Board			
PCB1	Main Control	Controls all sorter stapler functions.	18
Solenoid			
SOL 1	Turn Gate	Opens and closes the turn gate to direct the copies into either the proof tray or the bins.	6
Sensors			
S1	Bin Lift Timing -1	Monitors the rotation of the bin lift motor by detecting the timing disk.	24 or 25
S2	Bin Lift Timing -2	Controls the stop timing of the bin lift motor so that the bin lift timing sensor -1 can detect the timing disk properly.	24 or 25
S3	Jogger H.P.	Detects if the jogger bar is in the home position.	19
S4	Paper	Detects if copies are under the hammer.	8
S5	Bin (LED)	Detects if there is paper in the bins (light emitting element).	3
S6	Bin (Photo transistor)	Detects if there is paper in the bins (light receiving element).	17
S7	Grip H.P.	Detects if the grip assembly is in the home position.	16
S8	Bin H.P.	Detects if all the bins are in the down (home) position.	15
S9	Bin Exit	Detects paper jams at the bin exit area.	5
S10	Proof Tray Exit	Detects paper jams at the proof tray exit area.	4
S11	Roller Drive Timing	Monitors the roller drive motor speed by detecting the timing disk.	2
Switches			
SW1	Upper Lift Limit	Stops the bin lift motor when this switch detects the upper limit position of the bins.	22
SW2	Wire Tension	Stops the bin lift motor when this switch detects the lower limit position of the bins through the bin lift wire tension.	21
SW3	Front Door	Cuts the dc 24 V line when the front door is open.	14
SW4	Sorter Stapler Set	Cuts the dc 24 V line when the sorter stapler unit is open.	7

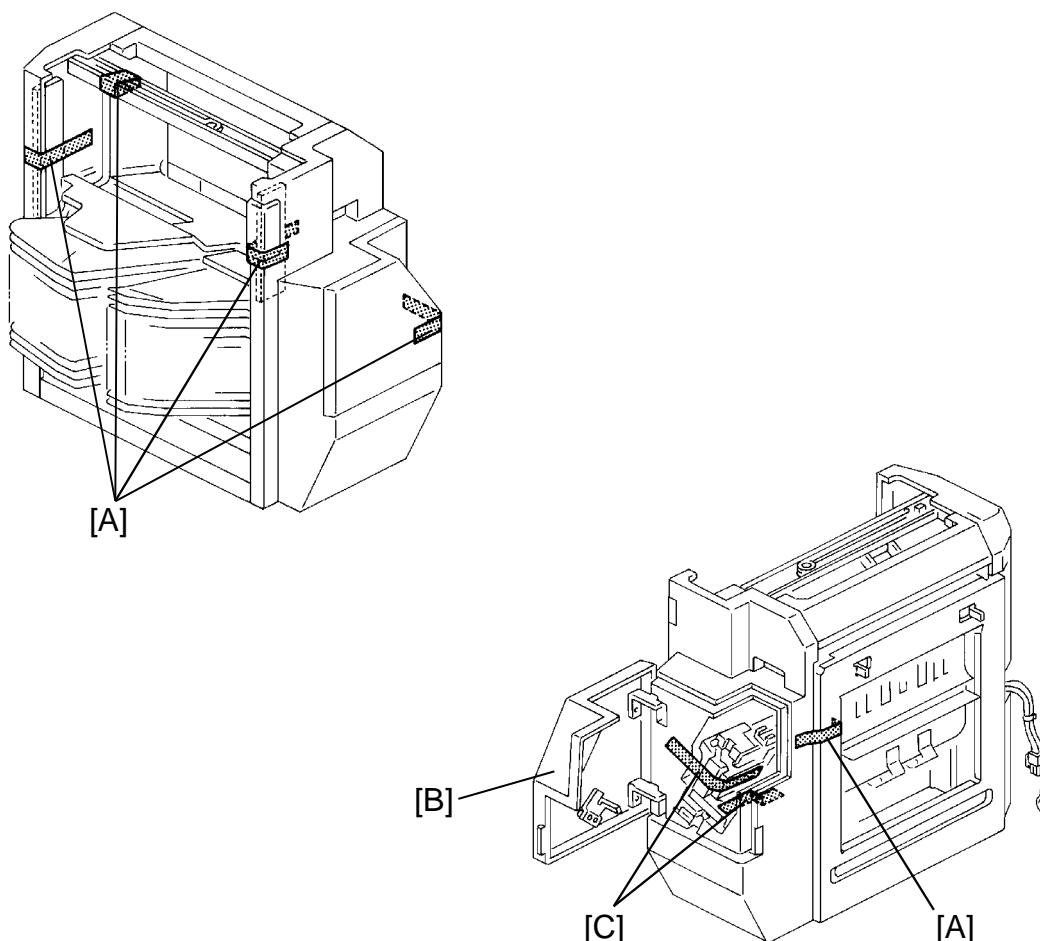
Symbol	Name	Function	Index No.
SW5	Staple End	Detects the staple end condition.	10
SW6	Staple Guide	Detects if the staple guide plate is closed.	9
SW7	Staple H.P.	Detects if the staple hammer is in the home position.	11

3. ACCESSORY CHECK

Check the quantity and condition of the accessories in the box as listed below:

1. Harness Cover	1
2. Proof Tray	1
3. Staple Cartridge	1
4. Decal Switch	1
5. Fiber Optics Cable	1
6. Staple Position Decal.....	1
7. Stepped Screw	1
8. Philips Truss Head Screw -M4 x 6	3
9. Philips Pan Head Screw -M4 x 12	4
10. Grounding Screw with Toothed Washer --M4 x 8.....	1
11. New Equipment Condition Report	
(--17 machine only)	1
12. Envelope for N.E.C.R.	
(--17 machine only)	1
13. Installation Procedure	1

4. INSTALLATION PROCEDURE

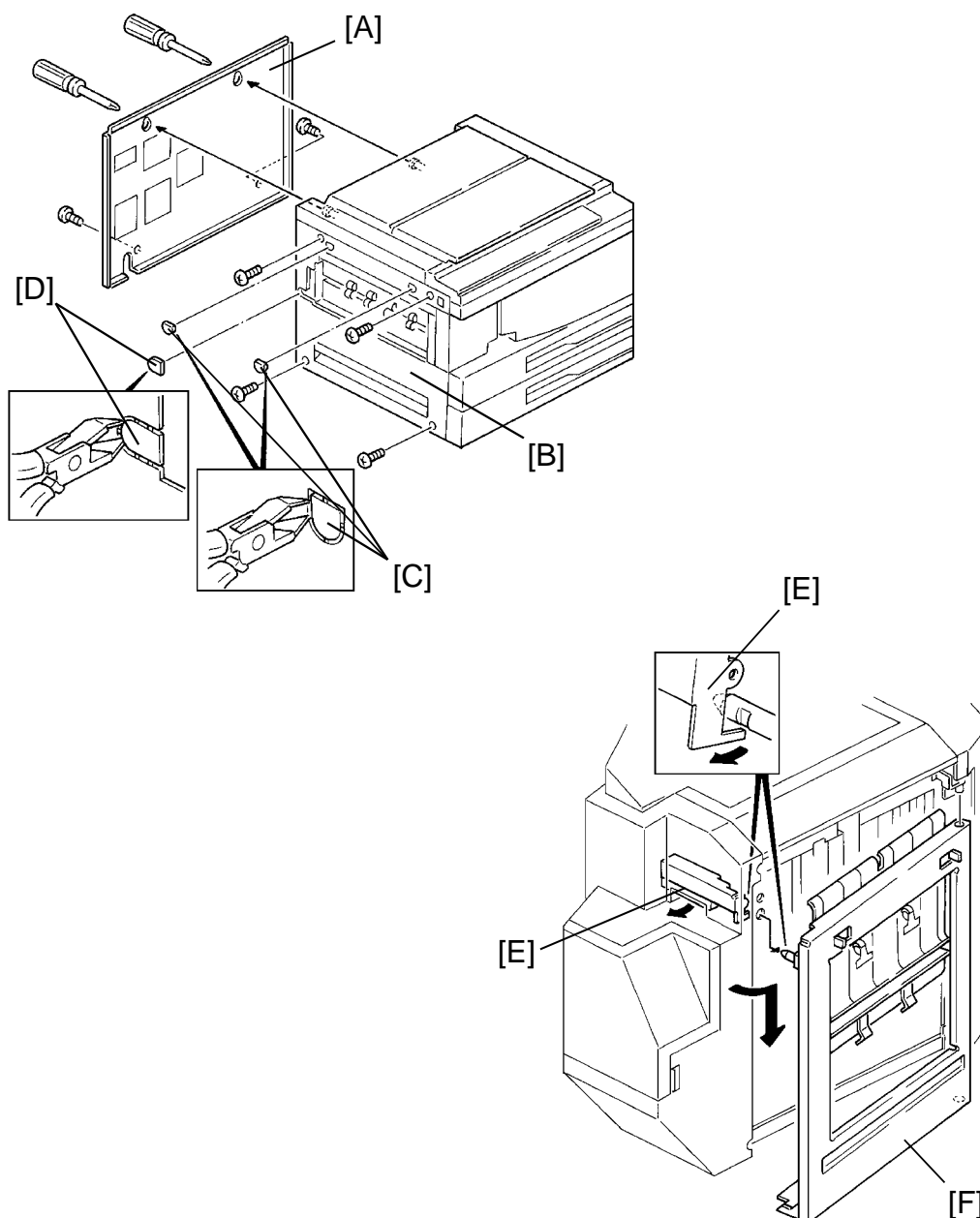


NOTE: The sorter adapter (A328) should be installed before installing the sorter stapler.

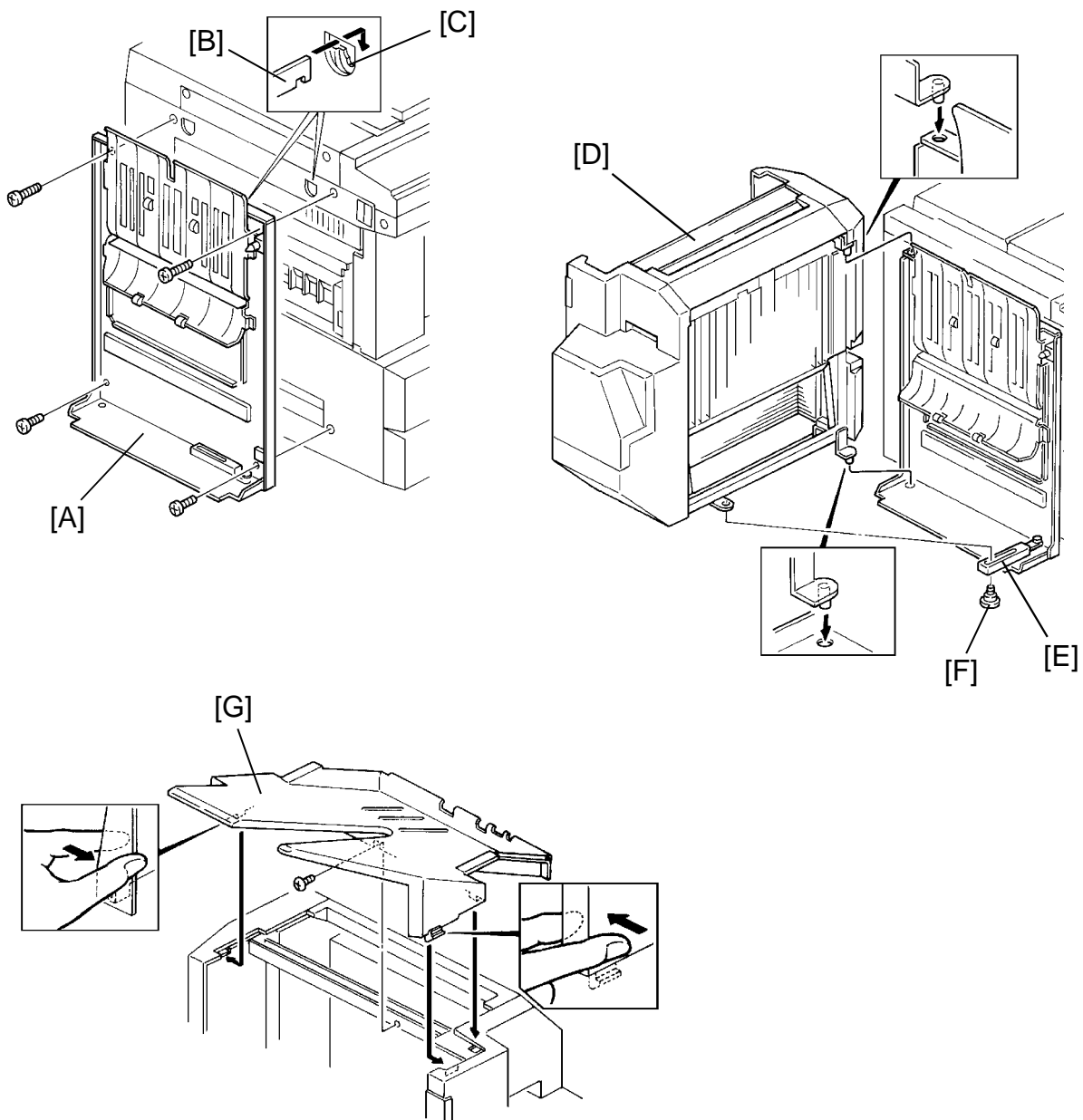
The interface PCB (A344) is necessary for sorter stapler installation.

CAUTION: Unplug the copier power cord before starting the following procedure.

1. Remove the strips of tape [A] and open the front door [B].
2. Remove the strips of tape [C] from the staple unit and close the front door.



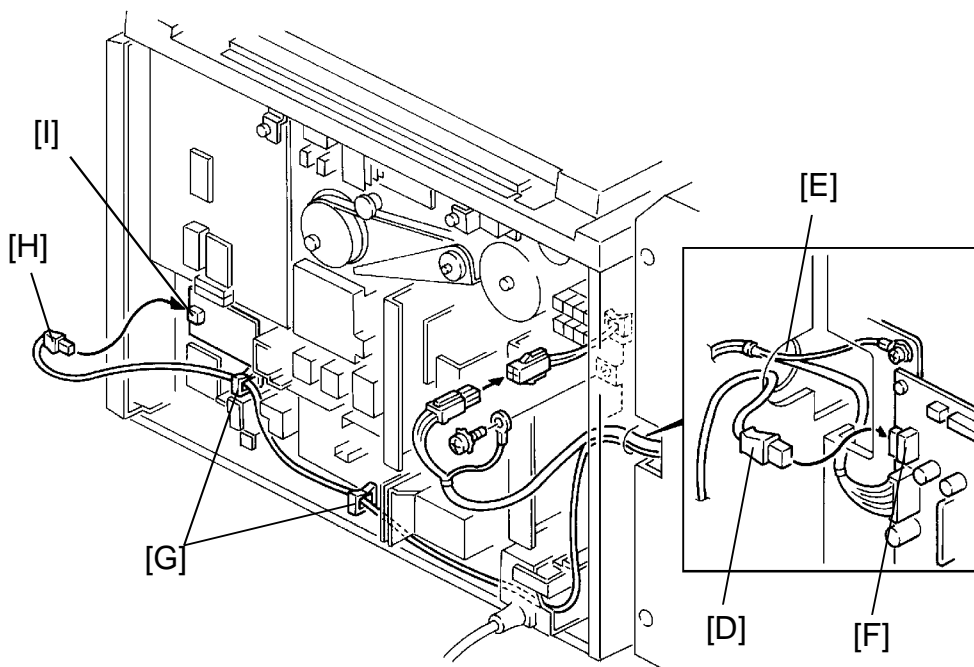
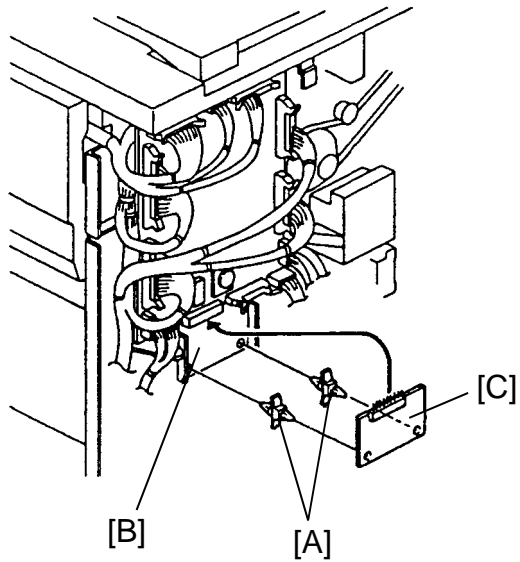
3. Remove the copier rear cover [A] (remove 2 screws and loosen 2 screws).
4. Remove the 4 screws securing the copier left cover [B].
5. Remove the cover plates [C,D] from the left cover by cutting them with cutting pliers.
6. Release the lock lever [E] of the sorter stapler and unhook the S/S mounting frame [F] as shown.



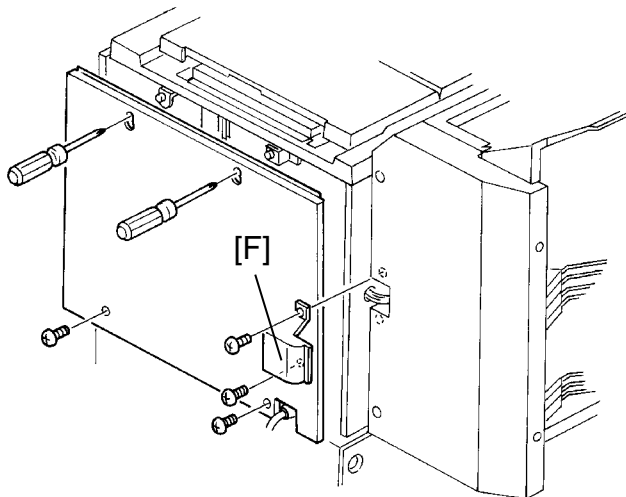
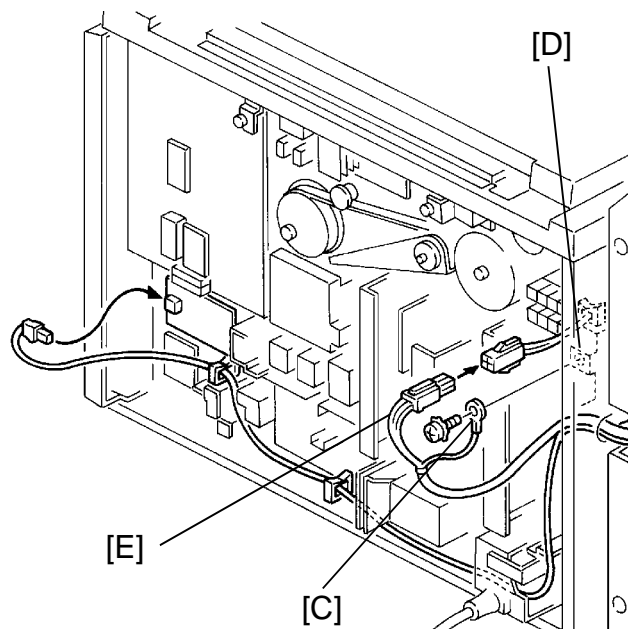
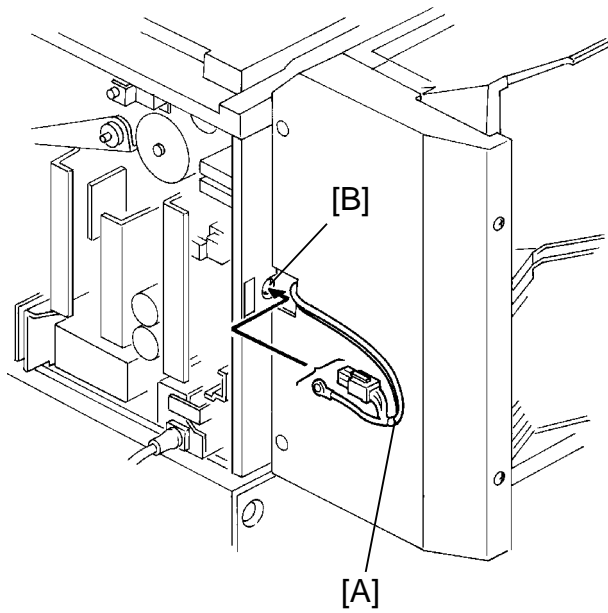
7. Install the S/S mounting frame [A] on the copier as shown (4 screws – M4 x 12).

NOTE: When hooking the S/S mounting frame on the left side of the copier, make sure that the positioning hooks [B] of the frame are properly inserted in the positioning holes [C] of the copier.

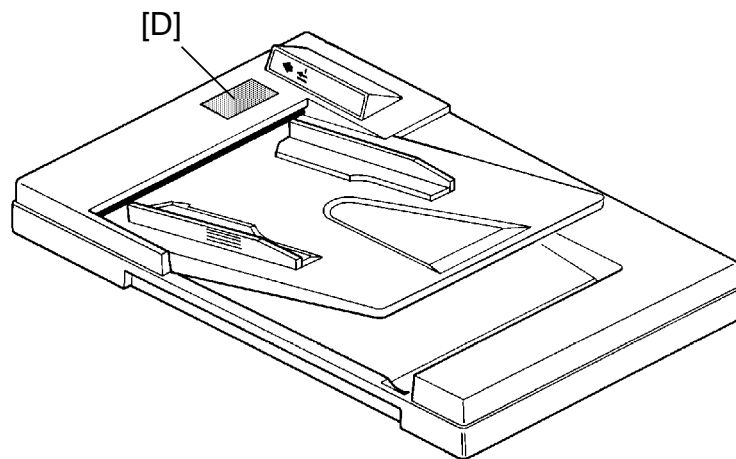
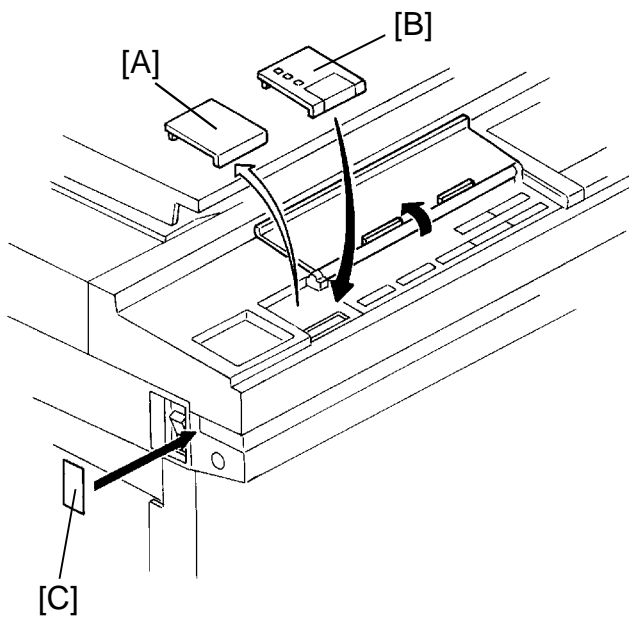
8. Install the sorter stapler [D] on the S/S mounting frame (2 hinge pins at the rear).
9. Connect the link lever [E] with the sorter stapler by using stepped screw [F], and then close the sorter stapler.
10. Install the proof tray [G] (1 screw) as shown.



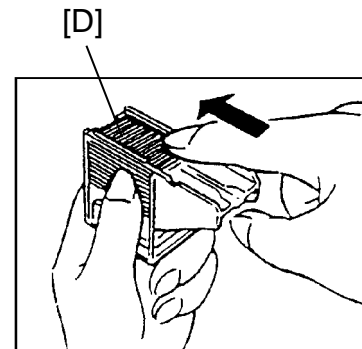
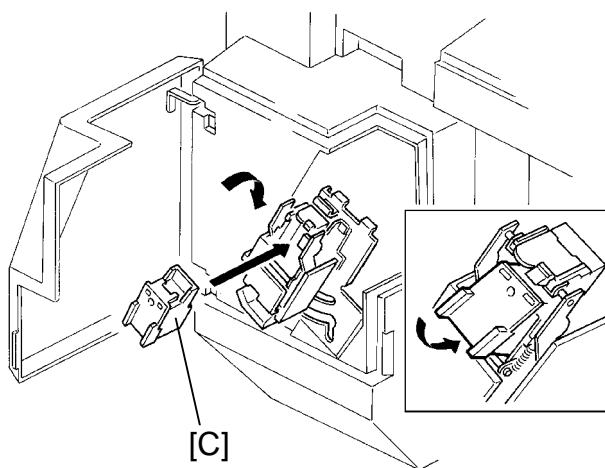
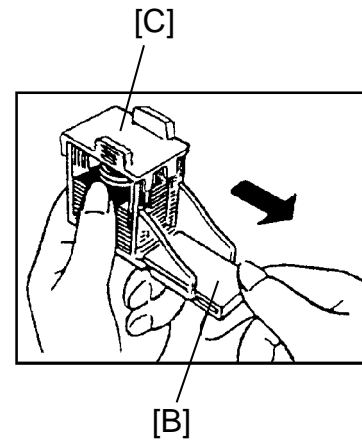
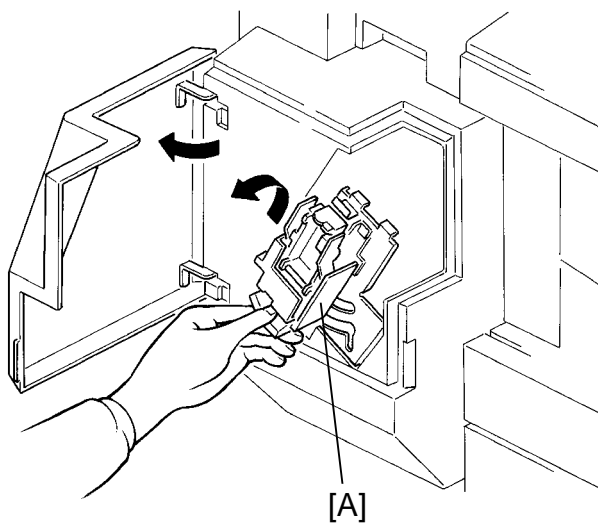
11. Set the 2 locking supports [A] on the copier main board bracket [B] and install the interface PCB [C] onto CN114 on the main board as shown.
12. Pass the fiber optics cable [D] through the access hole [E] and connect to CN110 [F] on the main board of the sorter stapler.
13. Run the fiber optics cable as shown and set it in the wire saddles [G].
14. Connect the other end [H] of the fiber optics cable to CN703 [I] on the interface PCB.



15. Pass the sorter stapler harness [A] through the access hole [B].
16. Secure the protective earth wire [C] on the bracket [D] (1 grounding screw with toothed washer), and couple the connector (4P white) [E].
17. Install the harness cover [F] on the sorter stapler as shown (2 screws).
18. Install the copier rear cover.



19. Remove the left plastic cover [A] on the operation panel and install the sorter key top and cover [B] instead.
(The sorter key top and cover are provided as accessories for the copier.)
20. Stick the main switch decal [C] on the copier as shown.
21. Stick the staple position decal [D] on the ARDF as shown. (If there is no ARDF, stick it on the corresponding position of the platen cover.)



22. Open the front door of the sorter stapler and swing the staple unit [A] up.
23. Remove the green plastic clip [B] from the staple cartridge [C] and correct the position of the staple sheet [D] if necessary.
24. Install the cartridge in the stapler while holding the staple unit.
25. Set the staple unit at the original position, close the S/S front door, and plug in the copier.
26. Turn on the copier main switch and test the operation of the sorter stapler.

NOTE: The stapler will not be stapling for the first 10 or so copies until the first staple comes to the proper position from the cartridge.

5. SERVICE TABLE (MAIN CONTROL BOARD)

5.1 DIP SWITCHES

DIP SW 100

1	2	3	4	5	FUNCTION	Remarks
0	0	0	0	0	Standard	
*1	1	0	0	0	Sorter Free Run	#1
	0	1	0	0	Staple Free Run	#2
	1	1	0	0	Sorter&Staple Free Run	#3
0	0	0	0	1	Bin Sensor Adjustment	

NOTE:*1 Confirm the setting from DIP SW 100 -2 to -5 before turning on DIP SW 100 - 1 (Start SW function).
Turn off DIP SW 100 - 1 to stop the function.

Remarks

- #1 The roller drive motor turns on.
The sorting operation is repeated from the 1st bin to the 20th bin.
Operated components:
 - Turn gate solenoid
 - Bin lift motor
 - Jogger motor
- #2 The stapling operation is repeated from the 1st bin to the 20th bin. When there is no paper in a bin, the stapling operation is skipped for that bin.
Operated components:
 - Bin lift motor
 - Grip motor
 - Stapler motor
- #3 #1 and #2 are repeated together.
Combinations other than those above are used at the factory.

5.2 LED and Variable Resistor

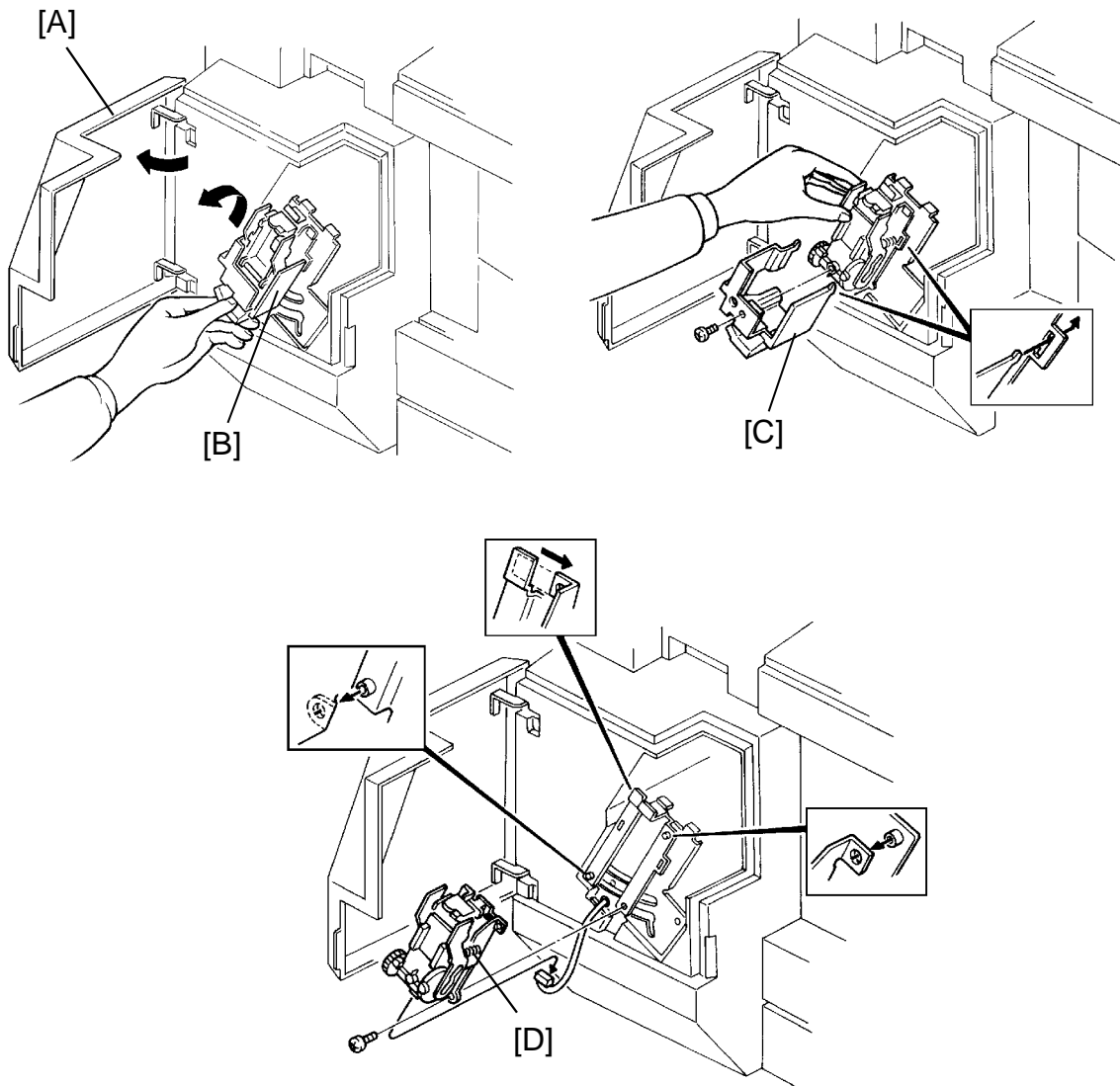
LED No.	VR No.	FUNCTION
100	100	Adjusts bin sensor sensitivity.

5.3 TEST POINT

Number	FUNCTION
TP100	GND
TP101	+24V
TP102	+5V

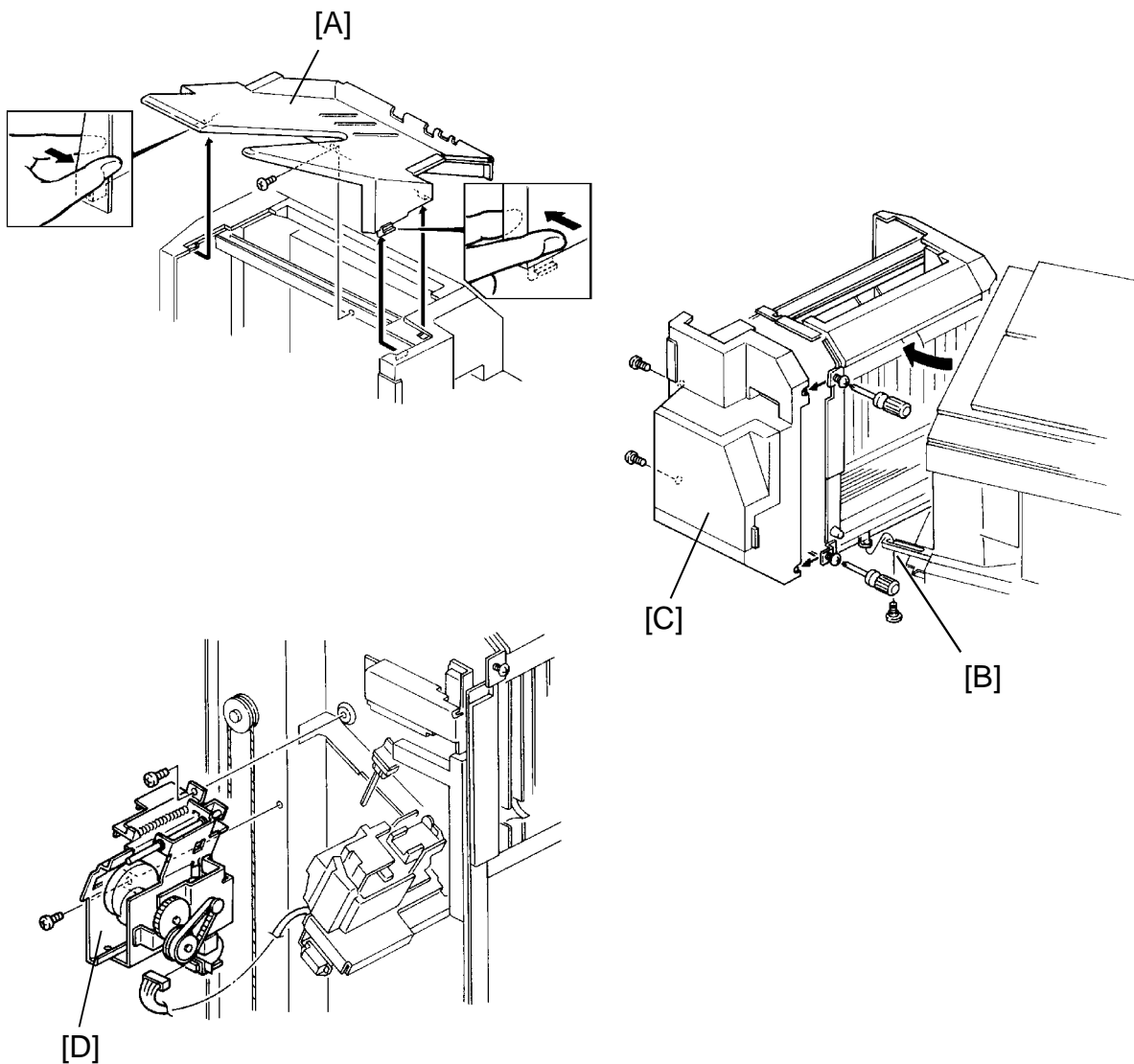
6. REPLACEMENT AND ADJUSTMENT

6.1 STAPLER REMOVAL



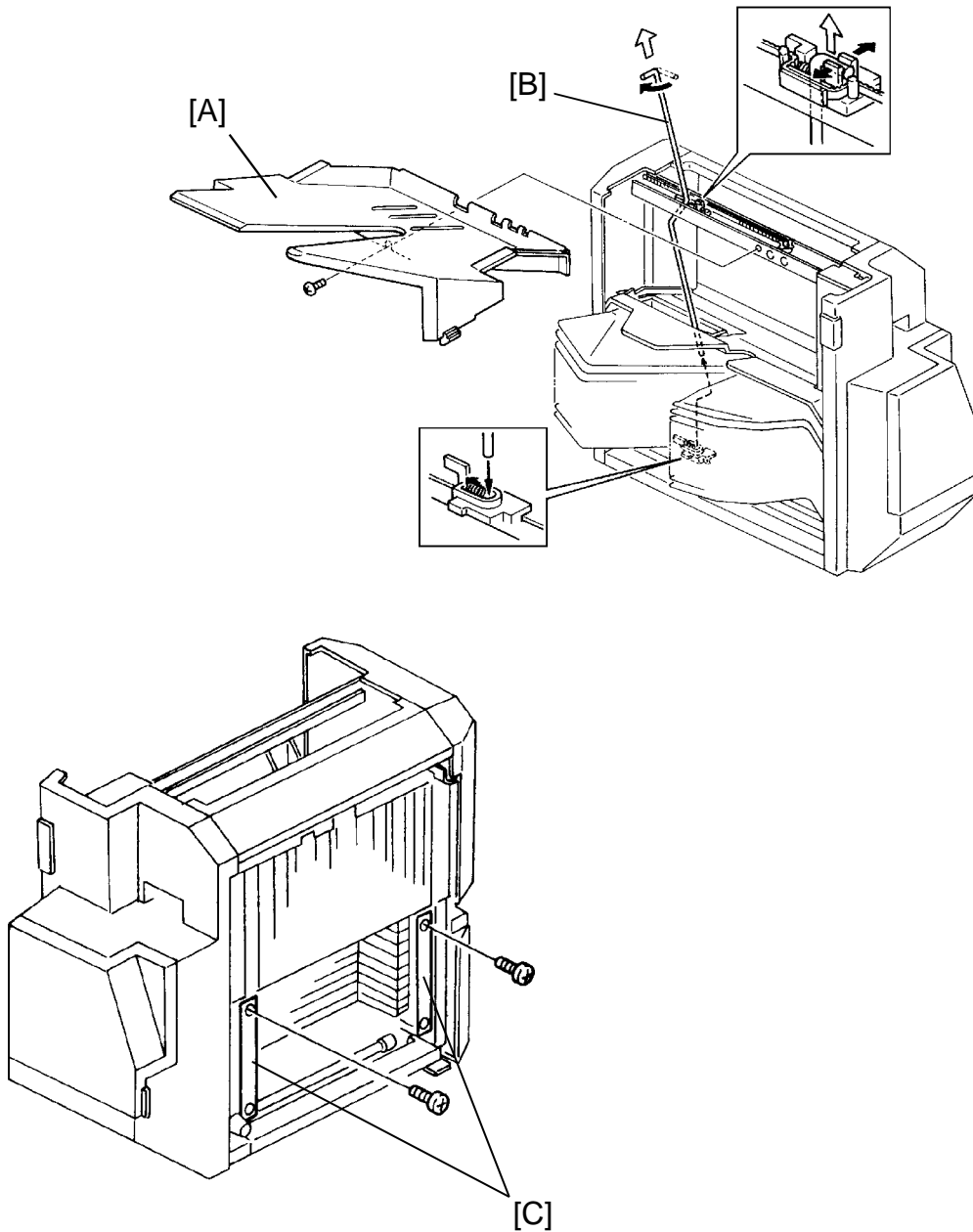
1. Open the front door [A] of the sorter and swing the staple unit [B] up.
2. Remove the staple unit cover [C] (1 screw).
3. Remove the stapler [D] (1 screw and 1 connector).

6.2 GRIP ASSEMBLY REMOVAL

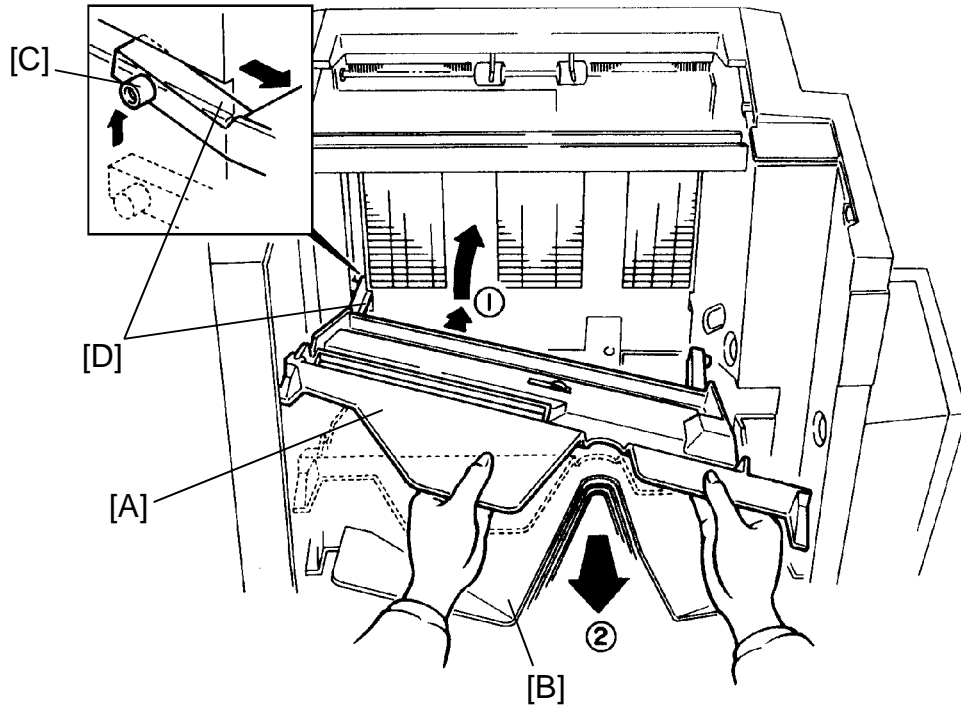


1. Remove the proof tray [A] (1 screw).
2. Swing out the sorter stapler and disconnect the link lever [B] (1 stepped screw).
3. Remove the front cover [C] (remove 2 screws and loosen 2 screws).
4. Remove the grip assembly [D] (2 screws and 1 connector).

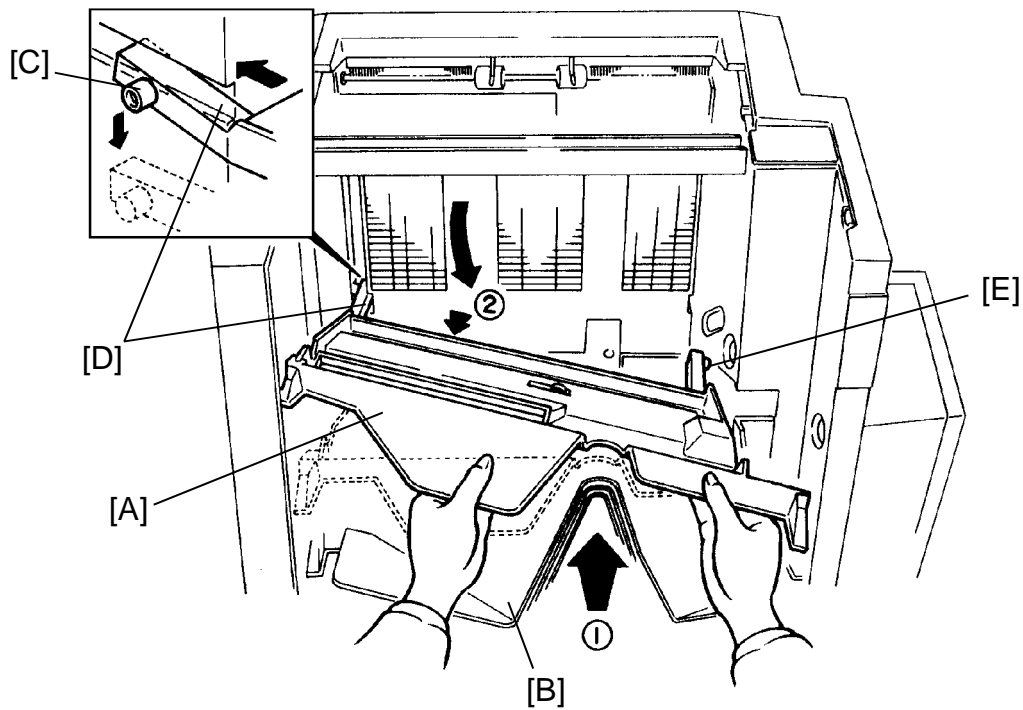
6.3 BIN REPLACEMENT



1. Remove the sorter stapler from the copier.
2. Remove the proof tray [A] (1 screw).
3. Remove the jogger bar [B] as shown.
4. Remove the upper securing screw of the bin link [C] (1 screw each).



5. Remove the support bin [A] and bins [B].
- (1) Hold the bin [A or B] with both hands.
 - (2) Push the bin forward until the wheels [C] reach the bend.
 - (3) Push the left side of the bin forward and pull that side up.
 - (4) As you pull the left side up, the right wheel will leave its track.
 - (5) When the left wheel reaches the slot [D], pull the bin out.

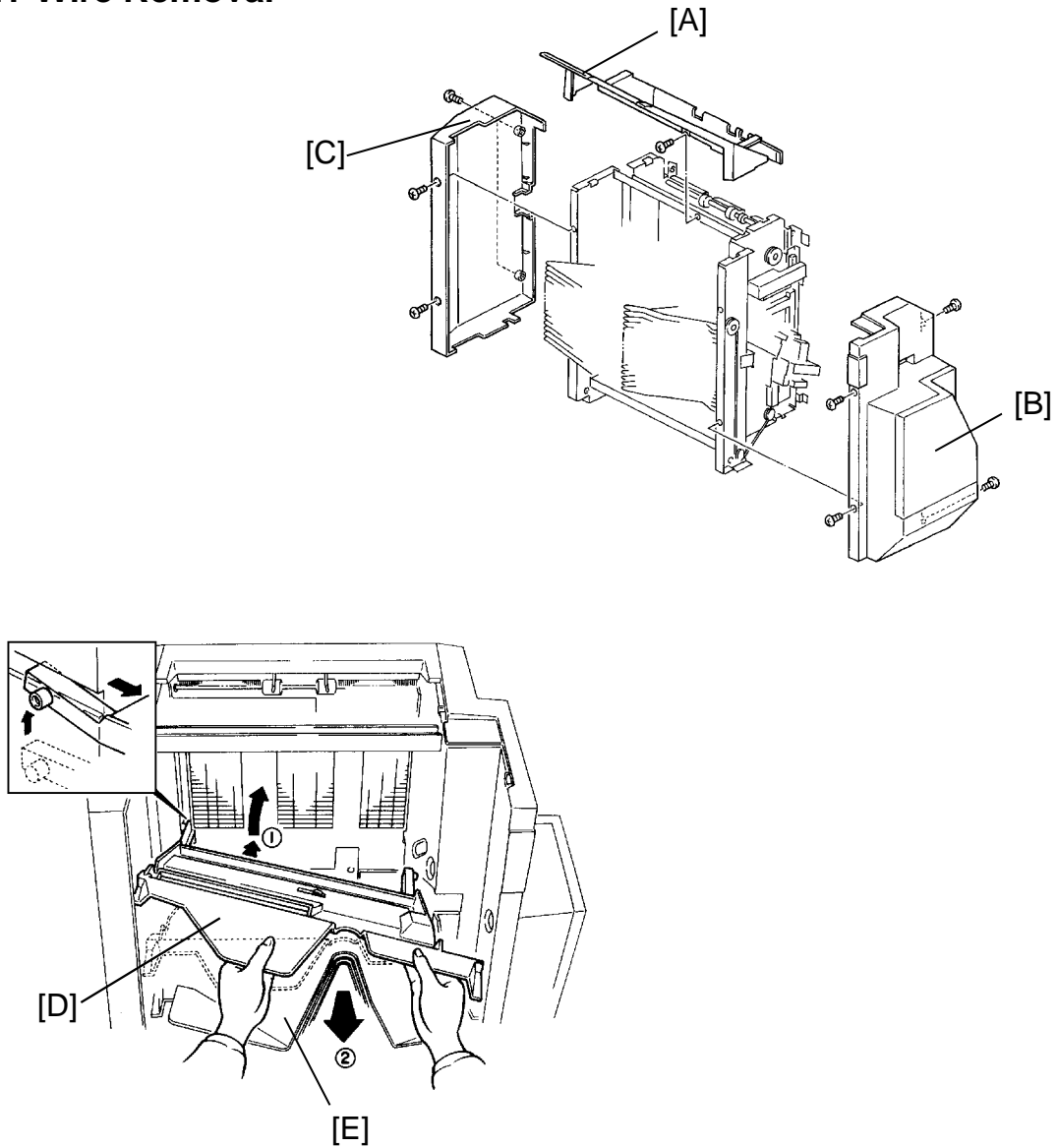


6. Install the support bin [A] and bins [B].

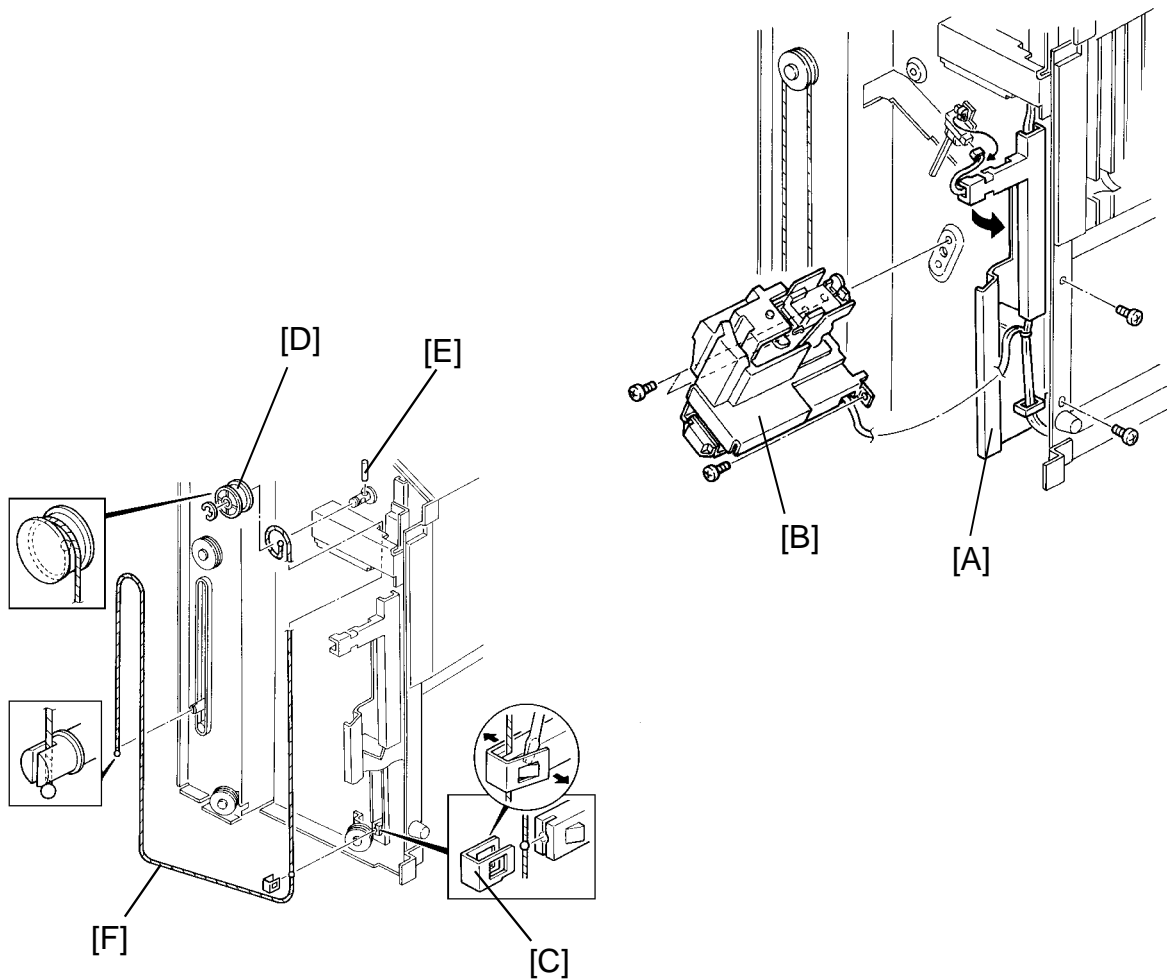
- (1) Hold the bin top side up with both hands.
- (2) Tilt the bin so the left side is higher than the right side.
- (3) Pass the left wheel [C] through the slot [D], at the same time, pass the right wheel [E] just below the stapler opening.
- (4) Set the left wheel into the left track, then push the right wheel into the right track.

6.4 BIN LIFT WIRE REPLACEMENT

6.4.1 Wire Removal

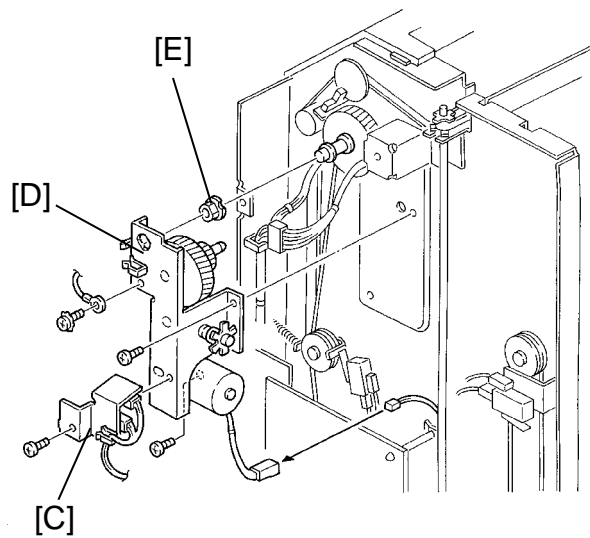
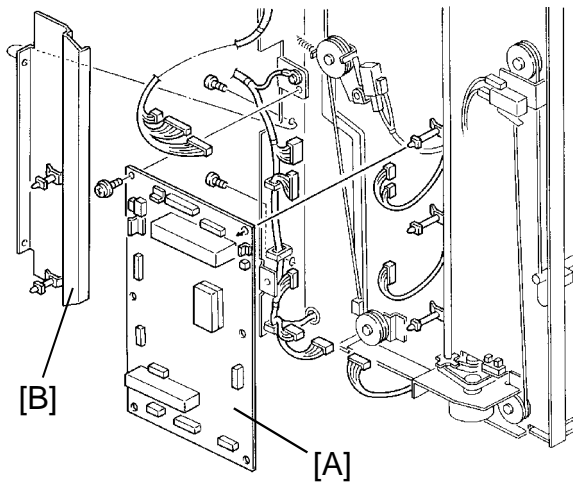


1. Remove the sorter stapler from the copier.
2. Remove the following parts:
 - Proof Tray [A] (1 screw).
 - Front Cover [B] (loosen 2 screws and remove 2 screw)
 - Rear Cover [C] (4 screws)
 - Support Bin [D] (see Bin Replacement)
 - Bins [E] (see Bin Replacement)



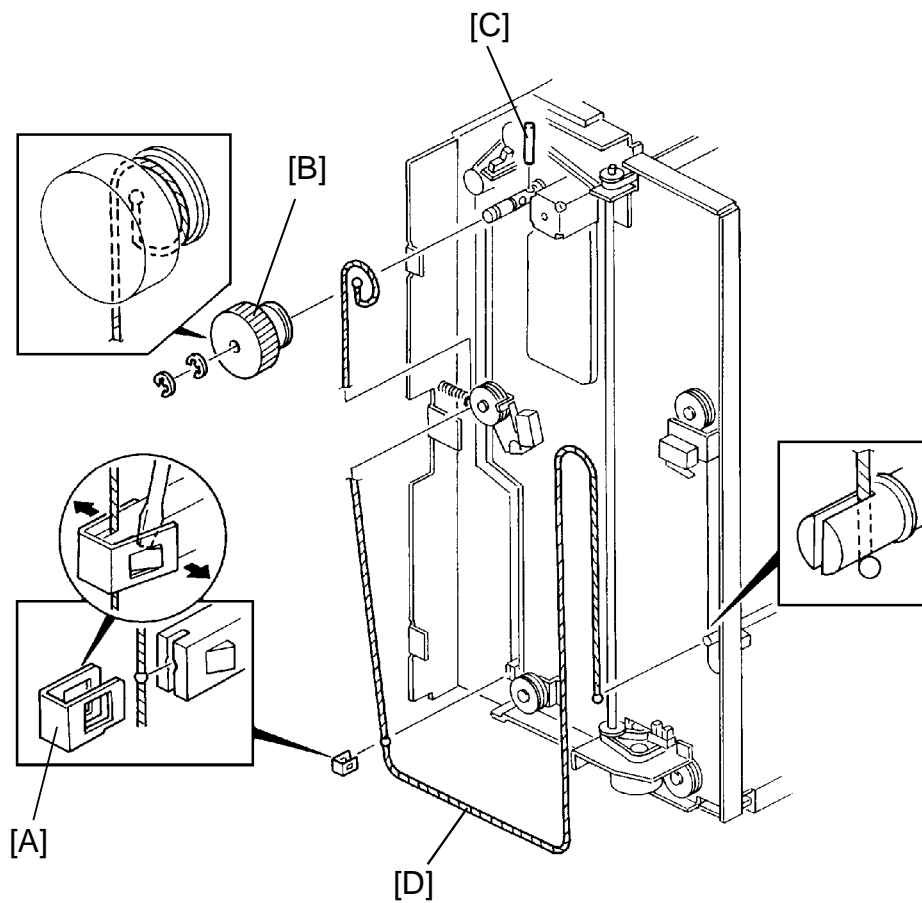
<Front side>

3. Swing the bin shaft cover [A] as shown (2 screws and 1 connector)
4. Remove the 3 fixing screws of the stapler unit [B].
5. Remove the bin support block stopper [C] as shown.
6. Remove the wire pulley [D] (1 E-ring).
- NOTE:** Be careful not to lose the parallel pin [E].
7. Remove the bin lift wire [F].



<Rear side>

8. Remove the main control board [A] (1 screw, 13 connectors and 6 locking supports).
9. Remove the bin lift shaft cover [B] (2 screws).
10. Remove the timing sensor bracket [C] (1 screw).
11. Remove the bin drive bracket [D] (1 grounding screw, 1 connector and 2 wire saddles).
12. Remove the bushing [E].



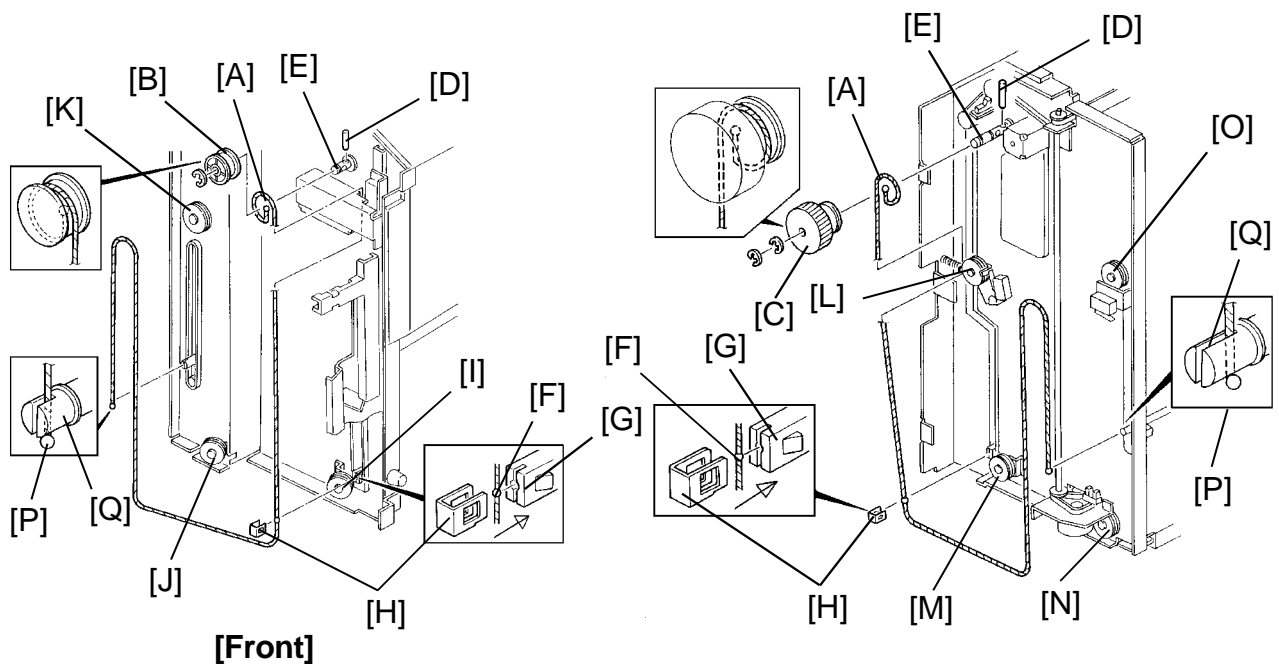
12. Remove the bin lift block stopper [A] as shown.

13. Remove the wire pulley/gear [B] (2 E-rings).

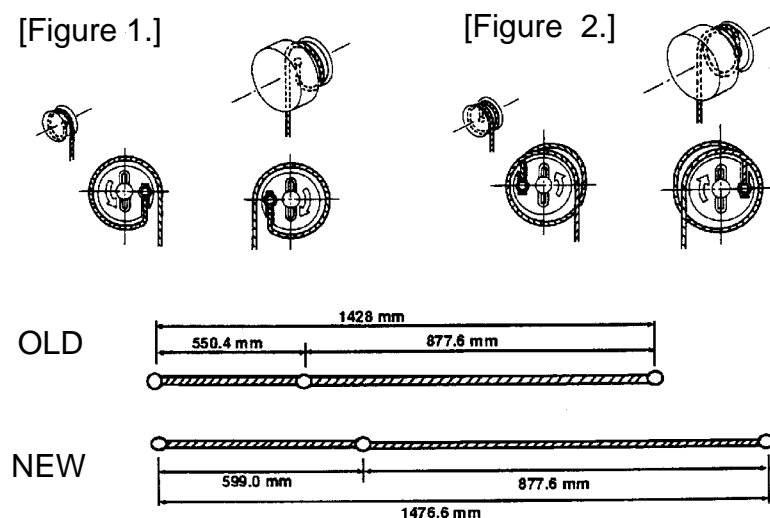
NOTE: Be careful not to lose the parallel pin [C].

14. Remove the bin lift wire [D].

6.4.2 Wire Installation

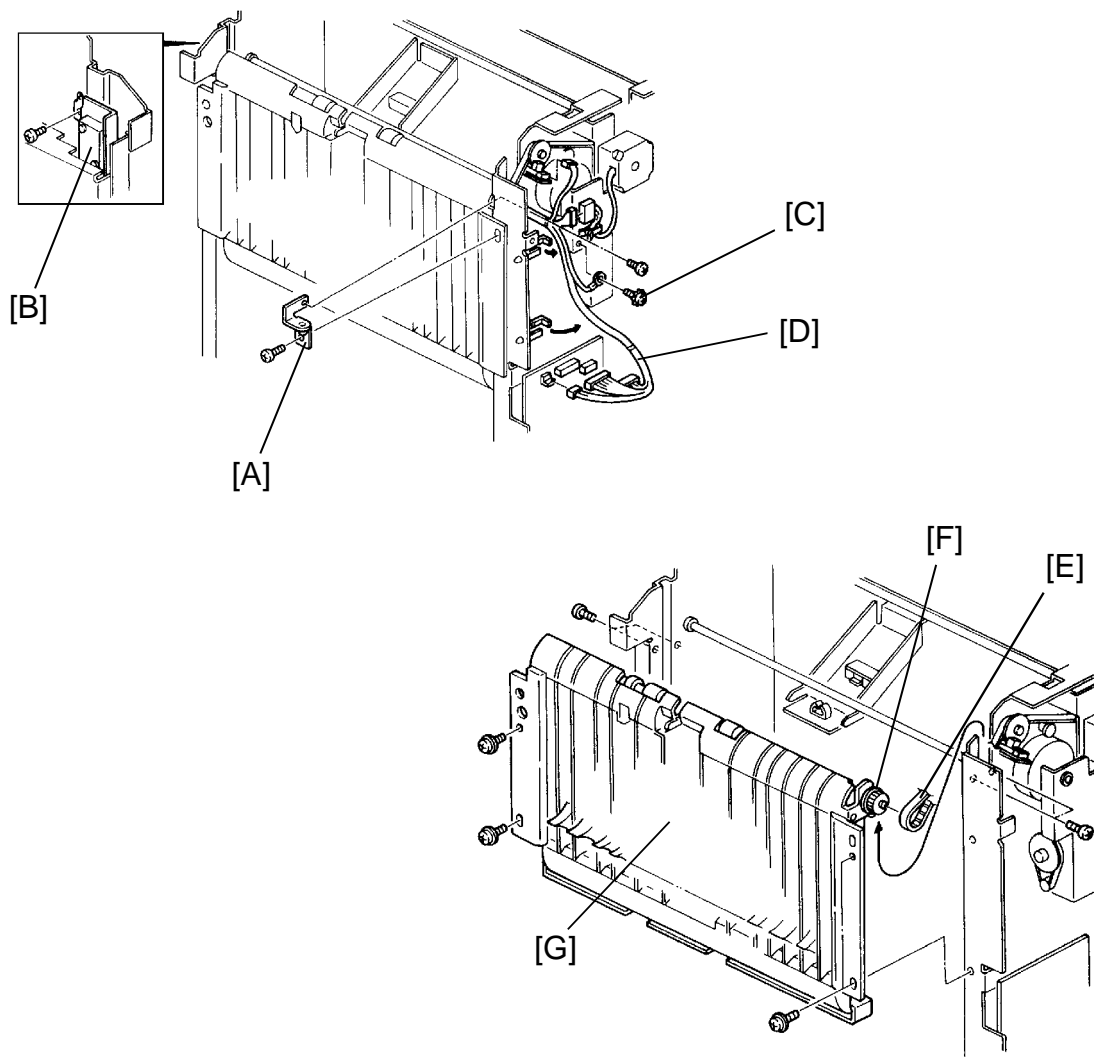


1. Put the bead [A] at the end of the wire in the slot of the wire pulley [B, C],
2. Insert the parallel pin [D] into the bin drive shaft [E] and then push in the wire pulleys.
3. If using the old style bin lift wire (P/N AA050076) - Wind the wire once as shown in figure 1 (below) and put the bead[F] in the slot of the bin support block [G] as shown above.
If using the new style bin lift wire (P/N AA050084) - Wind the wire one and a half turns as shown in figure 2 (below) and put the bead [F] in the slot of the bin support block [G] as shown above.



- Put the bin support block stopper [H] on the bin support block.
- Place the wire on the pulleys [I/J/K, L/M/N/O] and put the bead [P] in the slot of the bin lift shaft [Q].

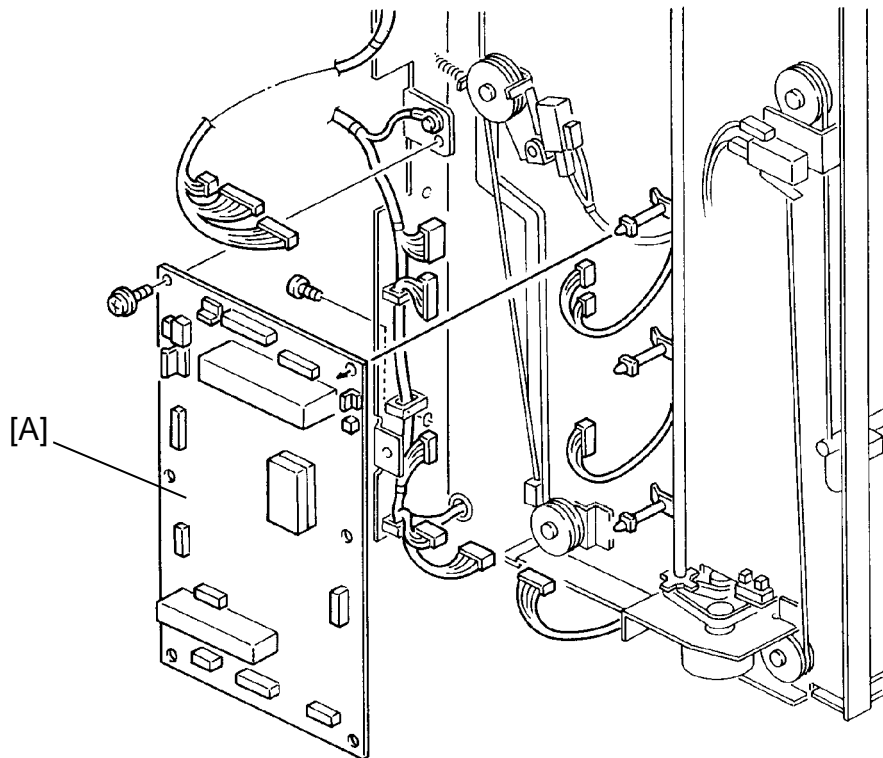
6.5 VERTICAL TRANSPORT UNIT REMOVAL



1. Remove the sorter stapler from the copier.
2. Remove the proof tray, the front cover, the rear cover, and the upper cover.
3. Remove the upper hinge [A] (2 screws) and the sorter stapler set switch bracket [B] (1 screw).
4. Remove the grounding screw [C] and disconnect the main harness [D] (5 connectors and 3 harness clamps).
5. Remove the timing belt [E] from the pulley [F].
6. Remove the vertical transport unit [G] (8 screws).

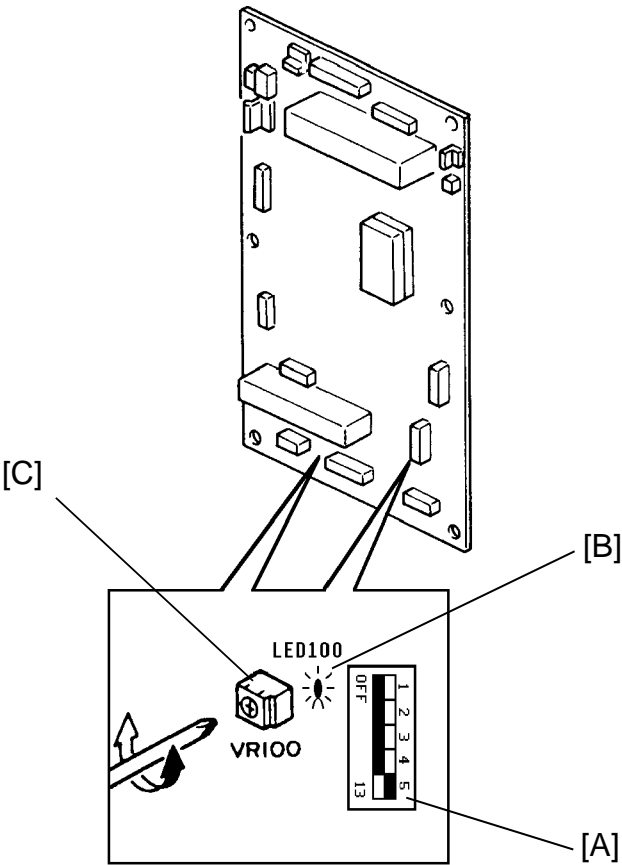
6.6 MAIN CONTROL BOARD REPLACEMENT AND ADJUSTMENT

6.6.1 1. Main Control Board Replacement



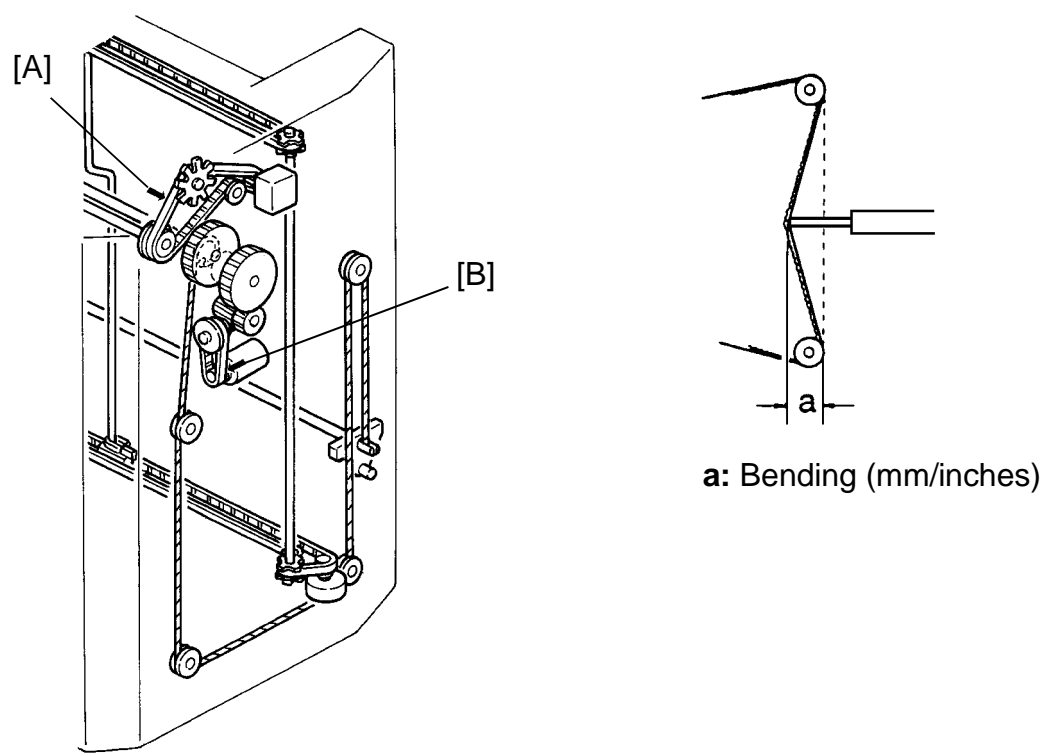
1. Remove the proof tray and the rear cover.
2. Disconnect the main control board connectors and fiber cable.
3. Replace the main control board [A] and connect the connectors.
4. Turn on the copier main switch.
5. Adjust the bin sensor (see next page).
6. Turn off the main switch.

6.6.2 Bin Sensor Adjustment



- 1. Turn on DIP SW100-5 [A]
- 2. If LED100 [B] is on, turn VR100 [C] counterclockwise until LED100 turns off.
- 3. Turn VR100 clockwise until LED100 just turns on.
- 4. Turn off DIP SW100-5.

6.7 BELT TENSION ADJUSTMENT



1. Remove the respective covers for the following belt tension adjustment:

Timing Belt [A]
(Roller Drive Motor) Proof Tray
Rear Cover

Timing Belt [B]
(Grip Motor) Proof Tray
Front Cover

2. Adjust the timing belt tension as follows:

Timing Belt	Bending	Pressure
A	4 mm (0.16")	250±50 g
B	45 mm (1.77")	250±50 g

7. SERVICE CALL CONDITIONS

7.1 CODE #EH1 - TIMING SENSOR (ROLLER DRIVE) OUTPUT ERROR

-Definition-

When the roller drive motor is turning, the timing sensor takes over 500 msec to change.

-Possible Causes-

- The timing sensor is defective.
- The roller drive motor is defective.
- The main control board is defective.

7.2 CODE #EH2 - TIMING SENSOR (BIN LIFT) OUTPUT ERROR

-Definition-

When the bin lift motor is turning, the timing sensor takes over 250 msec to change.

-Possible Causes-

- The timing sensor is defective.
- The bin lift motor is defective.
- The main control board is defective.

7.3 CODE #EH3 - JOGGER H.P. SENSOR OUTPUT ERROR

- Definition-

- When the jogger bar moves forward, the home position sensor takes over 100 msec to be deactivated.
- When the jogger bar moves backward, the home position sensor takes over 800 msec to be activated.

-Possible Causes-

- The jogger H.P. sensor is defective.
- The jogger motor is defective.
- The main control board is defective.

7.4 CODE #EH5 - GRIP H.P. SENSOR OUTPUT ERROR

- Definition-

- When the grip motor rotates, the grip H.P. sensor takes over 200 msec to be deactivated.
- When the grip motor rotates in reverse, the grip H.P. sensor takes over 2500 msec to be deactivated.

- Possible Causes-

- The grip H.P. sensor is defective.
- The grip motor is defective.
- The main control board is defective.

7.5 CODE #EH6 - STAPLER ERROR

- Definition-









- The stapler motor takes more than 800 msec for one staple operation (from H.P. to H.P.).







- Possible Causes-







- The stapler is defective.
- The main control board is defective.

8. ELECTRICAL COMPONENT DEFECTS

8.1 SENSORS

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Bin Lift Timing -1 (S1)	 ≥ 4.0 V	170-8	open (stays High)	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH2)" will be displayed.
	 ≤1.0 V		shorted (stays Low)		
Bin Lift Timing -2 (S2)	 ≥ 4.0 V	170-5	open (stays High)	--	--
	 ≤1.0 V		shorted (stays Low)		
Jogger H.P. (S3)	 ≤4.0 V	170-2	open (stays High)	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH3)" will be displayed.
	 ≥ 1.0 V		shorted (stays Low)	The jogger motor keeps rotating until "Sorter Jam" indicator starts blinking.	
Paper (S4)	 ≥ 4.0 V	140-5	open (stays High)	--	No staple operation even though a set of copies is at the staple position.
	 ≤ 1.0 V		shorted (stays Low)	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode.

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Bin-LED (S5)		140-4	open (stays Low)	"Sorter Jam" indicator starts blinking when sort/stack or staple mode is selected.	
			shorted (stays High)	--	--
Bin-Photo. Tr (S6)	 $\geq 4.0\text{ V}$	155-3	open (stays High)	--	No staple operation even though copying has been completed in staple mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter misfeed" location LED starts blinking when sort/stack or staple mode is selected.	
Grip H.P. (S7)	 $\geq 4.0\text{ V}$	115-2	open (stays High)	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH5)" will be displayed.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	The grip motor keeps rotating until "Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH5)" will be displayed.
Bin H.P. (S8)	 $\geq 4.0\text{ V}$	130-11	open (stays High)	--	--
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter Jam" indicator starts blinking.	--

Component (Symbol)		CN	Condition	Symptom	
				Main SW turns on	Ready condition
Bin Exit (S9)	 $\geq 4.0\text{ V}$	150-4	open (stays High)	--	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter Jam" indicator starts blinking.	
Proof Tray Exit (S10)	 $\geq 4.0\text{ V}$	150-7	open (stays High)	--	"Sorter Jam" indicator starts blinking when copies are made in normal mode.
	 $\leq 1.0\text{ V}$		shorted (stays Low)	"Sorter Jam" indicator starts blinking.	
Roller Drive Timing (S11)	 $\geq 4.0\text{ V}$	150-11	open (stays High)	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking or " SC code (EH1) " is displayed when copies are made.
	 $\leq 1.0\text{ V}$		shorted (stays Low)		

8.2 SWITCHES

Component (Symbol)	CN No.	Condition	Symptom	
			Main SW turns on	Ready condition
Upper Limit (SW1)	165-1	Open	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH2)" will be displayed.
		Shorted	–	–
Wire Tension (SW2)	165-4	Open	"Sorter Jam" indicator starts blinking.	"Sorter Jam" indicator starts blinking when copies are made in sort/stack or staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH2)" will be displayed.
		Shorted	–	–
Front Door (SW3)	100-3	Open	"C-5" is displayed even if the front door closed.	
		Shorted	"C-5" is not displayed even if the front door opened.	
Sorter Stapler Set (SW4)	100-3	Open	"C-5" is displayed even if the sorter stapler is closed.	
		Shorted	"C-5" is not displayed even if the sorter stapler is opened.	
Staple End (SW5)	130-9	Open	"Add staple" indicator does not light even though the staple cartridge is empty.	
		Shorted	"Add staple" indicator lights even though the staple cartridge is not empty.	
Staple Guide (SW6)	130-8	Open	"Add staple" indicator does not light even though the staple guide is opened.	
		Shorted	"Add staple" indicator lights even though the staple guide is closed.	
Staple H.P. (SW7)	130-6	Open	"Sorter Jam" indicator starts blinking or "SC code (EH6)" is displayed when copies are made in staple mode.	
		Shorted		

8.3 FUSE

Component (Symbol)	Condition	Symptom
FU100 (Main Control Board)	Open	"Sorter Jam" indicator starts blinking when copies are made in staple mode. After the sorter stapler or front door is opened/closed, "SC code (EH6)" will be displayed.

TECHNICAL SERVICE BULLETINS



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-001

7/8/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: FIELD SERVICE MANUAL - INSERT

GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 5 sets of replacement page(s). Additional sets can be ordered through NSPC, reference part number P5433001.

PAGES:

The revised areas have been highlighted by an arrow (⇒).

- | | |
|--------|---------------------|
| ●3-18 | Updated Information |
| ●3-18A | Updated Information |
| ●7-21 | Updated Information |
| ●10-9 | Updated Information |

Note:
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of additional bulletins.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-002

7/8/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: DIRTY PRESSURE ROLLER

SYMPTOM:

Toner and paper dust may accumulate on the pressure roller. If the accumulation is large enough, a partially unfused image may appear on the reverse side of the copy.

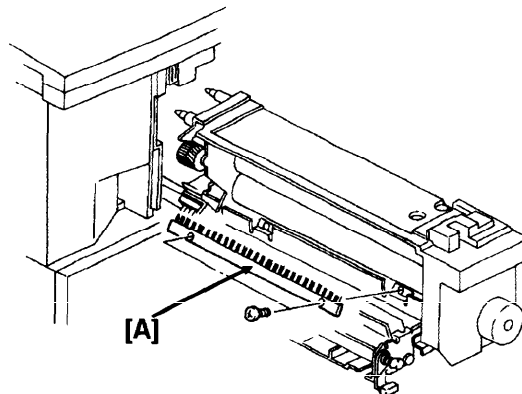
CAUSE:

Toner particles and paper dust accumulate on the antistatic brush which slightly contacts the pressure roller. The vibration of the fusing unit when the main motor rotates causes the toner and dust to fall from the brush onto the roller.

FIELD COUNTERMEASURE:

Remove the pressure roller antistatic brush as follows:

1. Open the front door and pull the fusing unit all the way out.
2. Open the fusing exit unit.
3. Remove the antistatic brush [A] (2 screws).
4. Clean the surface of the pressure roller with silicon oil.



NOTE: The antistatic brush is installed to prevent very thin translucent paper from wrapping around the pressure roller due to static electricity. Removal of this antistatic brush will not inhibit operation when using normal bond paper.

5. Reassemble.

PRODUCTION COUNTERMEASURE:

The antistatic brush for the pressure roller has been removed during production.

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A073204XXXX and A074204XXXX respectively will have the antistatic brush removed during production.

Note:
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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-003

7/28/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: ADD TONER INDICATION

SYMPTOM:

The "Add Toner" indication is displayed and SP#55 displays 2V for Vsp.

CAUSE:

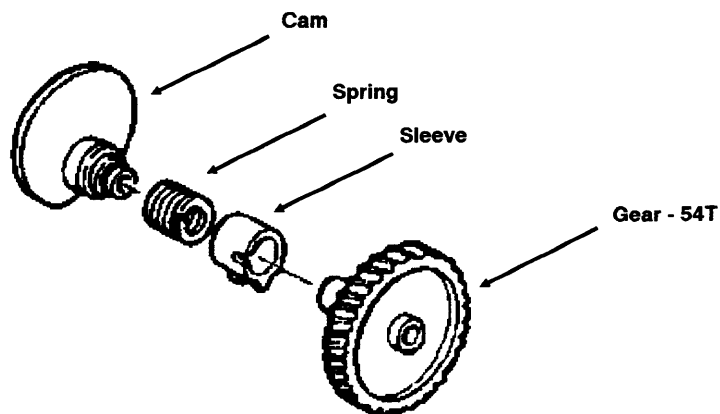
The development unit is not seated properly against the drum.

SOLUTION:

Clean and lubricate the development unit shift spring clutch with Mobil Temp 78.

Ensure proper operation of the development shift mechanism.

Note:
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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-004

7/28/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: MAIN BOARD

GENERAL:

The chart below illustrates the compatability of main boards to be installed in the FT5433 and FT5733 copiers. This is necessary to accommodate the duplex capability of the FT5733 copier.

MAIN BOARD PART NUMBER	FT5433	FT5733
A0695191	YES	NO
A0705191	NO	YES
A0705141	YES	YES

Note:
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TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-005

8/18/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: CODE 53 DISPLAYED

SYMPTOM:

The lock arm does not fit into place correctly or Code 53 is displayed on the operation panel.

CAUSE:

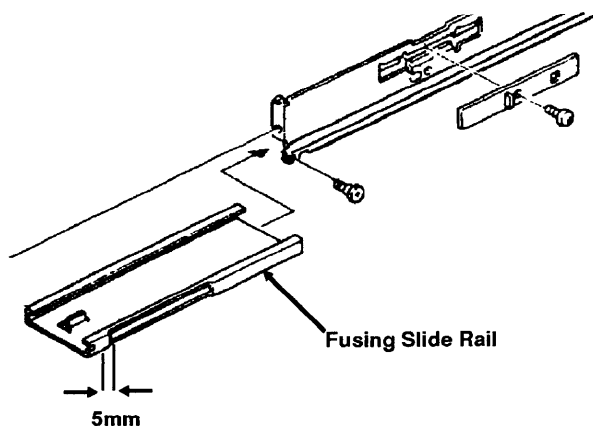
The fusing unit rail and fusing slide rail cut-outs may not match if the fusing slide rail moves back as the fusing unit is being pushed into its locked position causing the lock arm not to fit properly. The docking pin frame may also be deformed.

FIELD COUNTERMEASURE:

1. Replace the fusing slide rail with a modified one (NO change in P/N A0694113).

OR

File approximately 5mm from the cut-out area to increase its length.



2. Reform the frame of the docking pins to to its original position.
3. Reform the fuser frame; if necessary, to ensure proper insertion of the docking pins.

Continued...

PRODUCTION COUNTERMEASURE:

1. The tip of the docking pins will be rounded to ensure proper seating of the fusing unit.
2. The right fusing rail (P/N A0694115) and the fusing unit rail (P/N A0694129) will be modified to reduce excessive play (up/down) of the fusing unit.
3. A stopper will be added to the fuser slide rail (NO change in P/N A0694113) and the cut-out area increased by 5mm.

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A073208XXXX and A074208XXXX respectively will have the modified fusing slide rail installed during production.

All FT5433/5733 copiers manufactured after Serial Numbers A073207XXXX and A074207XXXX respectively will have the modified docking pins, right fusing rail and fusing unit rail installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-006

9/7/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: LCT MISFEEDS

GENERAL:

The paper feed, pick-up and separation rollers have been changed to prevent possible misfeeds at the large capacity tray. Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

Note:
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of additional bulletins.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AF031006	AF031019	Paper Feed Roller	1-1	3/S	35	7
54472723	AF030019	Pick-Up Roller	1-1		35	8
54472693	AF032019	Separation Roller	1-1		35	35

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

UNITS AFFECTED:

All FT5433/5733 copiers experiencing misfeeds will utilize these parts as service parts.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-007

10/5/92

APPLICABLE MODEL: FT5433/5733

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

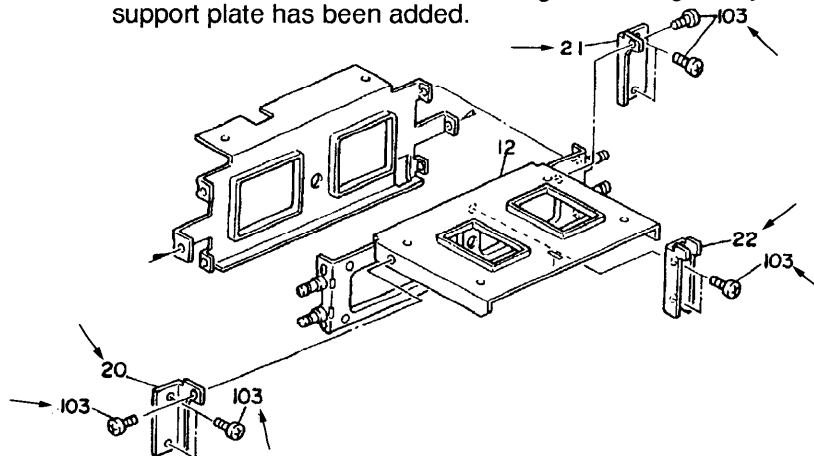
Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

- **UPDATE NO. 1 -** ALVANIA 2 GREASE - Alvania 2 grease is now available as a service part per field request.

PART NUMBER	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A0699502	Alvania 2 Grease	1	121	7*

* DENOTES NEW ITEM

- **UPDATE NO. 2 -** RIGHT STAY - To increase the strength of the right stay, a front, rear and upper support plate has been added.



PART NUMBER	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
A3354346	Front Support Plate	1	41	20 *
A3354347	Rear Support Plate	1	41	21 *
A3354348	Upper Support Plate	1	41	22 *
03130060W	Philips Pan Head Screw - M3 x 6	8	41	103

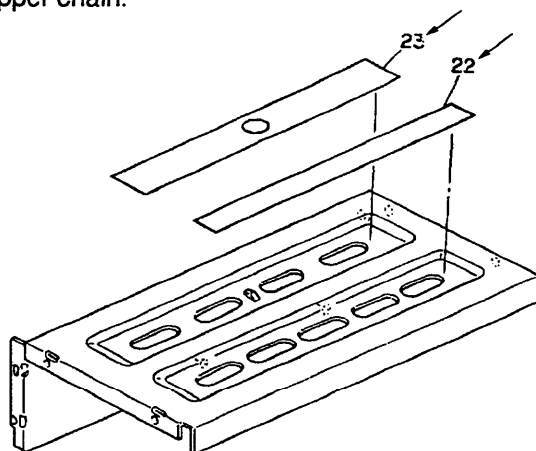
* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after serial numbers A3032040000 and A3042040000 respectively will have the support plates added to the right stay during production.

Continued...

- **UPDATE NO. 3 -** BOTTOM PLATE TAPE - Tape was added to the bottom plate to protect the stopper chain.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A3353412	Right Tape - Bottom Plate	1	43	22 *
A3353413	Left Tape - Bottom Plate	1	43	23 *

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after serial numbers A3032040000 and A3042040000 respectively will have the left and right tape added to the bottom plate during production.

- **UPDATE NO. 4 -** PARTS CATALOG CORRECTIONS - Please correct your parts catalogs as follows.

			REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	PAGE	ITEM
A0736542	A0746542	Key Top Cover Sorter - A4 (A074) (RICOH)	17A	45
A0731551	A0741551	Key Top Cover Sorter - LT (A074) (RICOH)	17A	45
A0736540	A0746540	Key Top Cover Non Option - A4 (A074) (RICOH)	17A	47
A0731499	A0741499	Key Top Cover Non Option - LT (A074) (RICOH)	17A	47
A0734912	A0744912	Decal - Duplex Misfeed Removal	97	9

Continued...

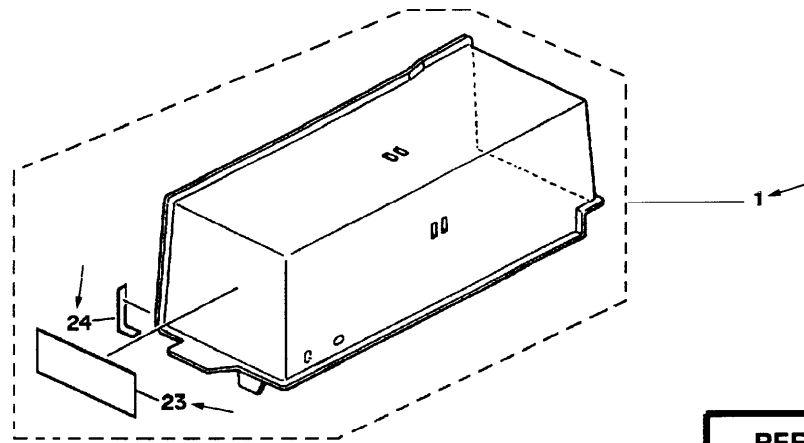
PAGE 17

PART NO.	INCORRECT DESCRIPTION	CORRECT DESCRIPTION	ITEM
A069 1479	Insulating Maylar	Insulating Mylar	9
A069 1478	Insulating Maylar	Insulating Mylar	13
A073 6517	Special Featuers Cover - A4 (A069/A073)	Special Features Cover - A4 (RICOH)	17
A073 1471	Special Featuers Cover - LT (A073)	Special Features Cover - LT (RICOH)	17
A345 5320	Special Featuers Cover - AF (A074)	Editor Indicator Cover - A4 (RICOH)	17
A345 5310	Special Featuers Cover - LT (A074)	Editor Indicator Cover - LT (RICOH)	17
A073 6519	LCD Gaidance - A4 (A073/A069)	LCD Guidance - A4 (A073/A069)(RICOH)	44
A074 6519	LCD Gaidance - A4 (A074)	LCD Guidance - A4 (A074)(RICOH)	44
A073 1485	LCD Gaidance - LT (A073)	LCD Guidance - LT (A073)(RICOH)	44
A074 1485	LCD Gaidance - LT (A074)	LCD Guidance - LT (A074)(RICOH)	44

Part Deletions:

PART NUMBER	DESCRIPTION	REFERENCE	
		PAGE	ITEM
AA00 2189	Decal - Paper size - LT	119	28
AA00 2148	Decal - Paper size - A4	119	28

Part Additions:

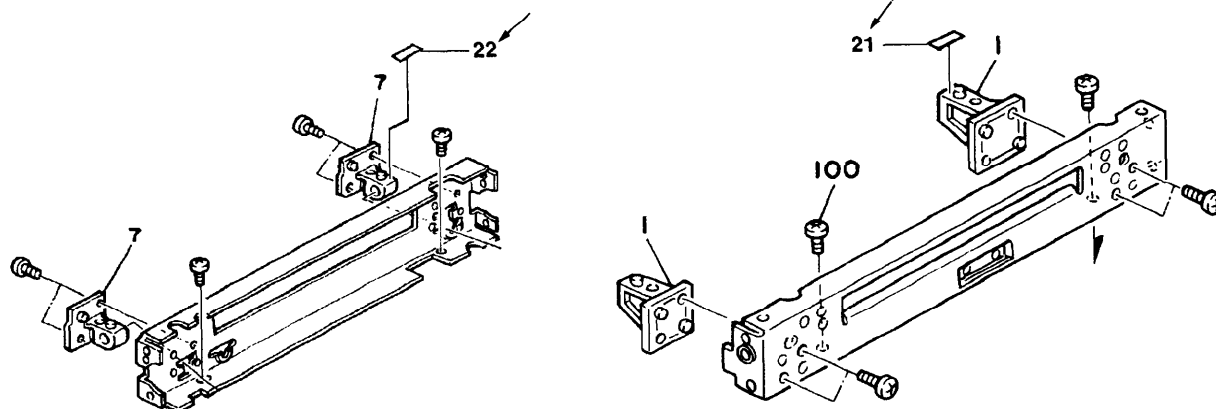


PART NUMBER	DESCRIPTION	REFERENCE	
		PAGE	ITEM
A335 1253	LCT Top Cover (RICOH)	39	1
A335 1257	LCT Top Cover (OEM))	39	1 *
A335 1269	Decal Guard Tape	39	23 *
A335 1271	Decal - Paper Set	39	24 *

* DENOTES NEW ITEM

Continued...

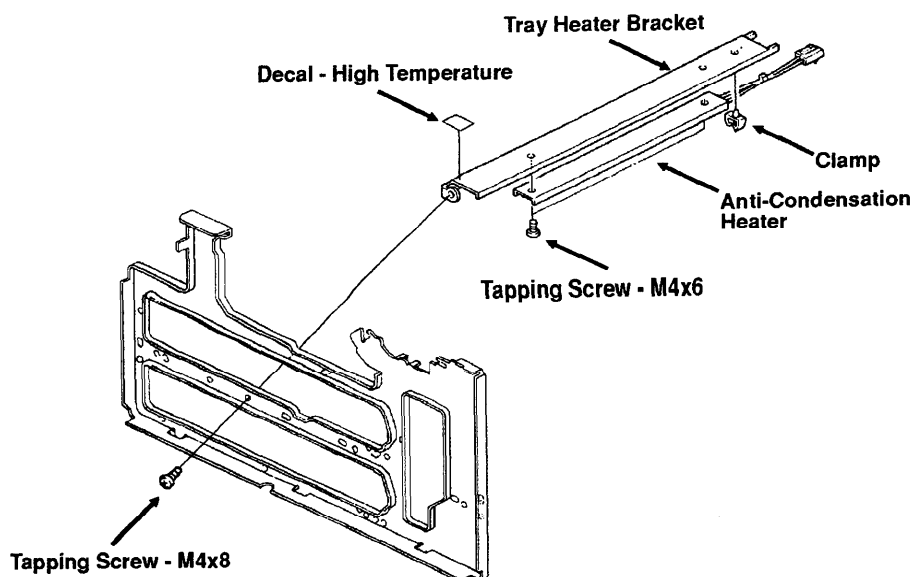
Part Additions (Continued):



PART NUMBER	DESCRIPTION	REFERENCE	
		PAGE	ITEM
A0691932	Rear Seal - Right Rail Holder	29	21 *
A0691943	Rear Seal - Left Rail Holder	29	22 *

* DENOTES NEW ITEM

- UPDATE NO. 5 -** An anti-condensation heater has been installed to prevent partially blank or light copies. This heater is installed between the 1st paper tray and the 2nd paper tray (FT5433) or between the 1st paper tray and the duplex unit (FT5733).



Continued...

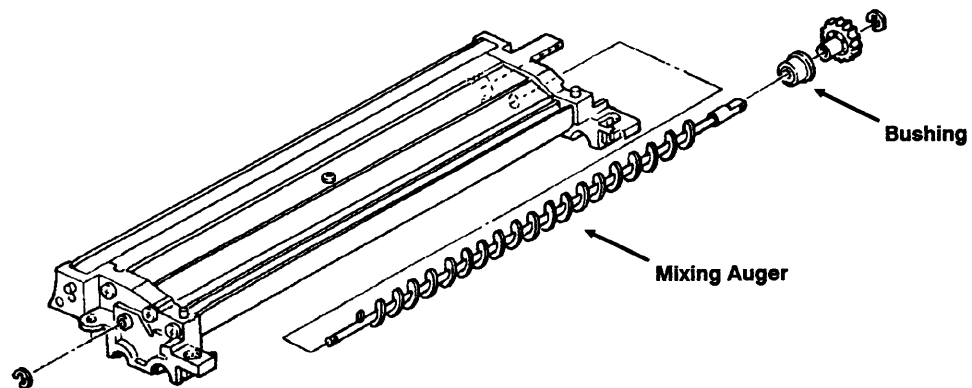
			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
AX40 0021	Anti-Condensation Heater - 115V 18W	1	77	16*
A069 2812	Tray Heater Bracket	1	77	17*
1105 0199	Clamp	1	77	104*
AA00 0015	Decal - High Temperature	1	77	18*
0434 0060W	Tapping Screw - M4 x 6	X + 1	77	105*
0434 0080W	Tapping Screw - M4 x 8	X + 1	77	101

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032020000 and A3042020000 respectively will have the anti-condensation heater installed during production.

- **UPDATE NO. 6** - The mixing auger is now available as a service part and the material of the bushing has been changed to minimize friction.



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
	AD03 7034	Mixing Auger	1	53	16*
AA08 0132		Bushing - 6 x 13	5-0	53	7
	5205 3103	Bushing - 6mm	5	53	7

* DENOTES NEW ITEM

NOTE: Replace the mixing auger and the new style bushing as a set initially.

UNITS AFFECTED:

All FT5433/5733 copiers will utilize these parts as service parts only.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-008

11/20/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: PARTS CATALOG UPDATE

GENERAL:

Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

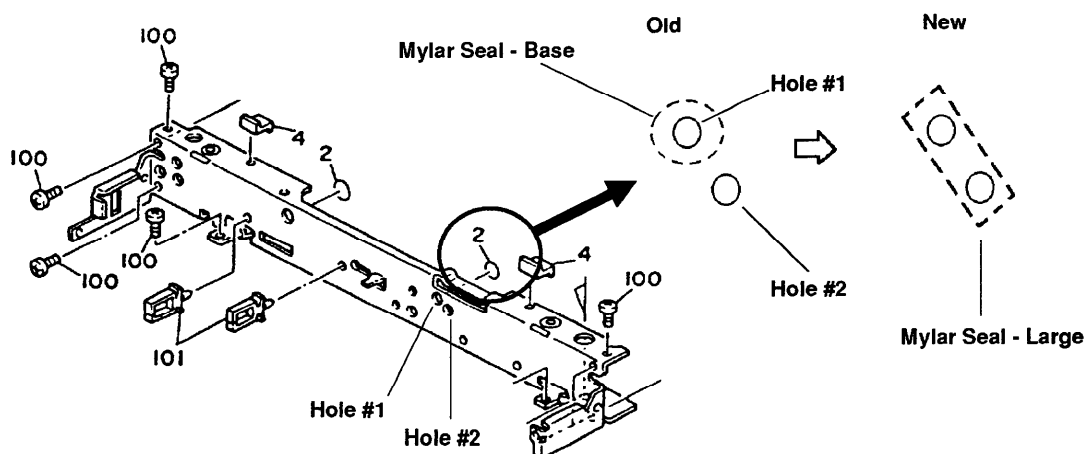
- **UPDATE NO. 1 - PRESSURE SPRING** - The pressure spring has been modified to improve LCT paper feed.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AA063164	AA063246	Pressure Spring	1-1	1	35	27

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032050000 and A3042060000 respectively will have the modified pressure spring installed during production.

- **UPDATE NO. 2 - MYLAR SEAL - BASE** - The size of the seal has been increased to improve light shielding.



INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

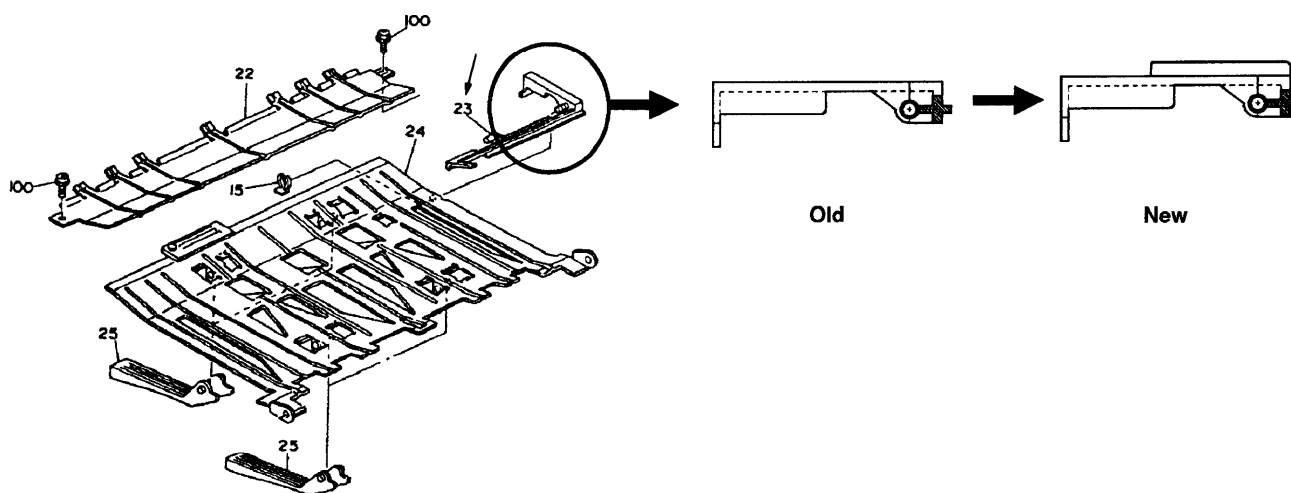
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
52052853		Mylar Seal - Base	7-6		29	2
	54421855	Mylar Seal - Large	1	1	29	23*

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032060000 and A3042060000 respectively will have the large mylar seal installed during production.

- **UPDATE NO. 3 -** PAPER ENTRANCE FEELER - A rib has been added to increase the strength of the feeler.



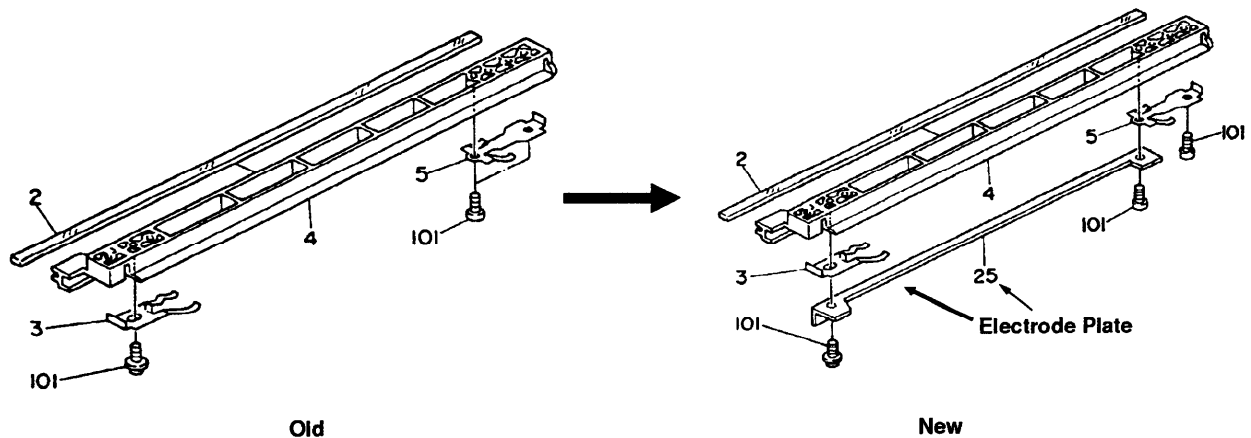
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AA111013	AA111019	Paper Entrance Feeler	1-1	1	97	23

UNITS AFFECTED:

All FT5433 copiers will utilize the modified paper entrance feeler as a service part.
All FT5733 copiers manufactured after Serial Number A3042060068 will have the modified paper entrance feeler installed during production.

Continued...

- **UPDATE NO. 4 - ELECTRODE PLATE** - An electrode plate has been added to ensure conductance between the spring plate (ground terminal) and the grid plate.



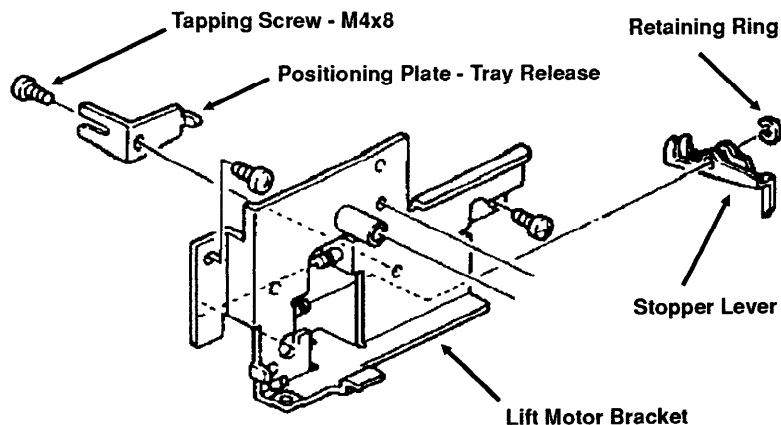
			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A0692075	Electrode Plate	1	51	25*

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032080000 and A3042080000 respectively will have the electrode plate installed during production.

- **UPDATE NO. 5 - LIFT MOTOR BRACKET** - The lift motor bracket, stopper lever and tray release positioning plate have been modified to facilitate assembly in the factory.



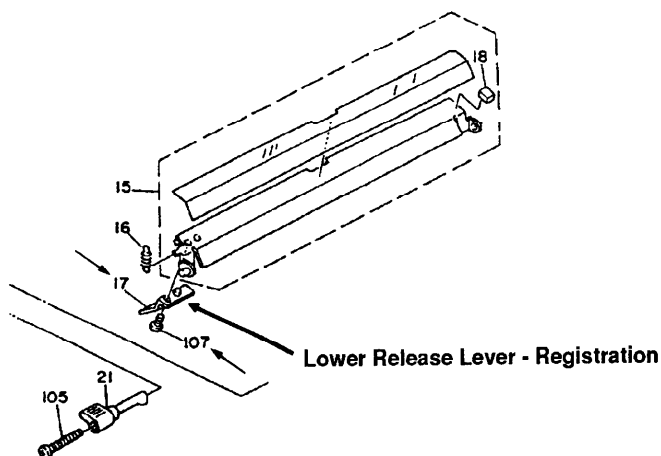
Continued...

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY Each Station	INT	REFERENCE	
					PAGE	ITEM
A0092644		Stopper Lever	2-0		37	14
04340080W		Tapping Screw - M4x8	X-3		37	104
07200060E		Retaining Ring - M6	X-3		37	102
A0692760		Positioning Plate - Tray Release	2-0		37	3
A0692755		Lift Motor Bracket	2-0		37	5
	A0692841	Lift Motor Bracket	2	0	37	5

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032070000 and A3042070000 respectively will have the new style parts installed during production.

- **UPDATE NO. 6 - REGISTRATION LOWER RELEASE LEVER** - This lever has been removed to simplify misfeed removal.



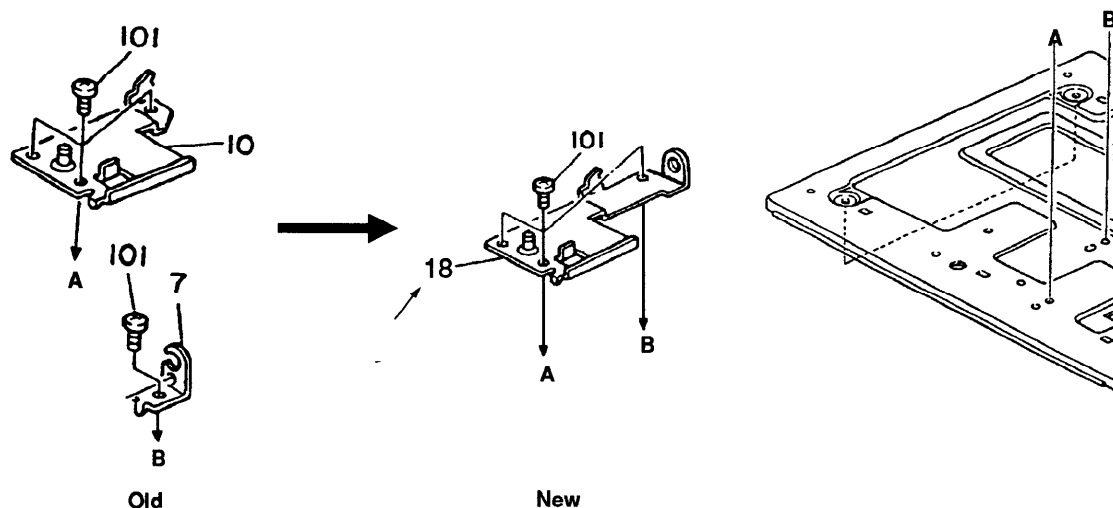
PART NO.	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
AG051080	Lower Release Lever - Registration	1-0	47	17
03130040W	Philips Pan Head Screw - M3x4	1-0	47	107

Continued...

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032050000 and A3042050000 respectively will have the registration lower release lever removed during production.

- **UPDATE NO. 7 - TRAY GUIDE BRACKET** - The bushing holder and tray guide plate have been merged to one part to facilitate assembly.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0692766		Tray Guide Plate	1-0		75	10
A0692748		Bushing Holder	1-0		75	7
	A0692846	Tray Guide Bracket	1	1	75	18*
04340060W		Tapping Screw - M4x6	X-1		75	100

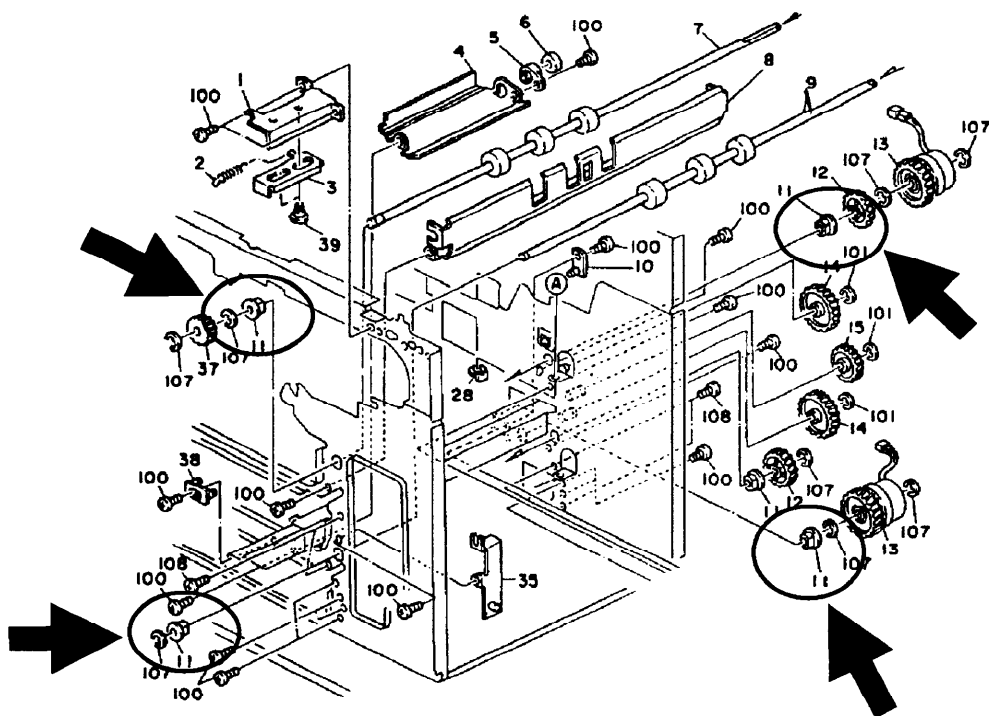
* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032070000 and A3042070000 respectively will have the tray guide bracket installed during production.

Continued...

- **UPDATE NO. 8 - BUSHING** - Four bushings have been modified to reduce main motor mechanical load.



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE	
					PAGE	ITEM
50530223		Bushing - 8mm	6-2		45	11
	AA082021	Bushing - 8x12x10mm	4	1	45	40*

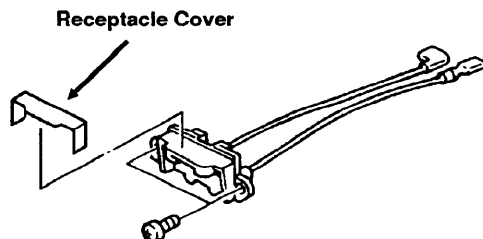
* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032060000 and A3042060000 respectively will have the four modified bushings installed during production.

Continued...

- **UPDATE NO. 9 - RECEPTACLE COVER** - The cover has been adhered to the T/S corona receptacle to prevent grease from migrating to the receptacle.



			REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A0692012	Receptacle Cover	1	65	30*

* DENOTES NEW ITEM

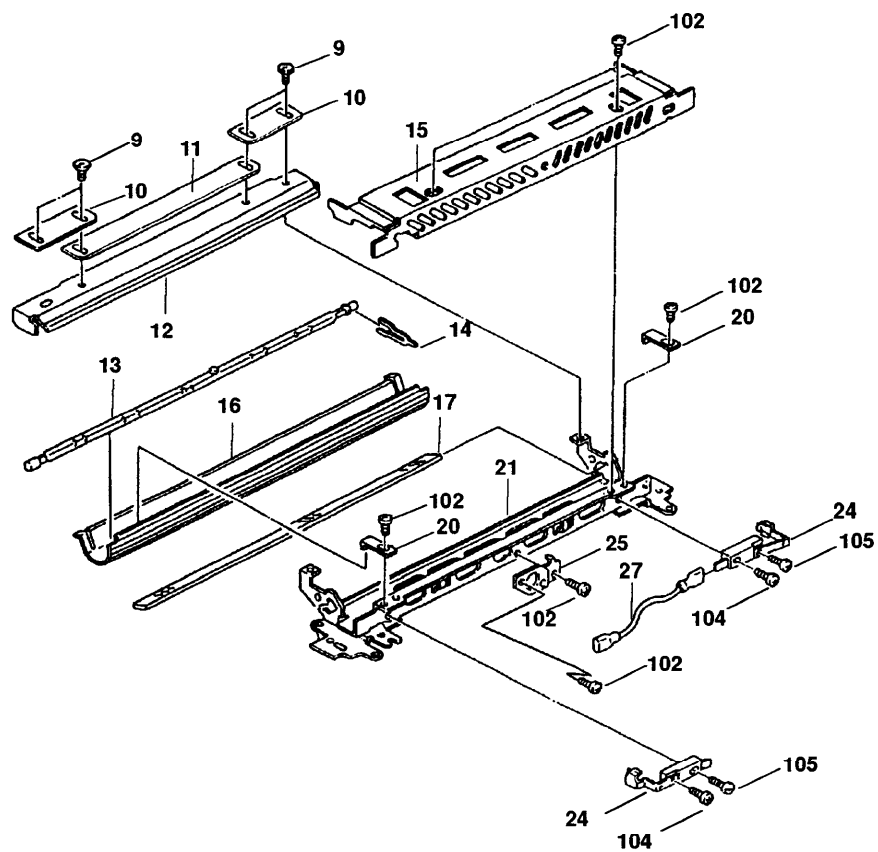
UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032050000 and A3042050000 respectively will have the receptacle cover adhered to the T/S corona receptacle during production.

- **UPDATE NO. 10 - 1st SCANNER UNIT** - The 1st scanner unit has been modified to standardize parts with other models.

Continued...

Old Parts:



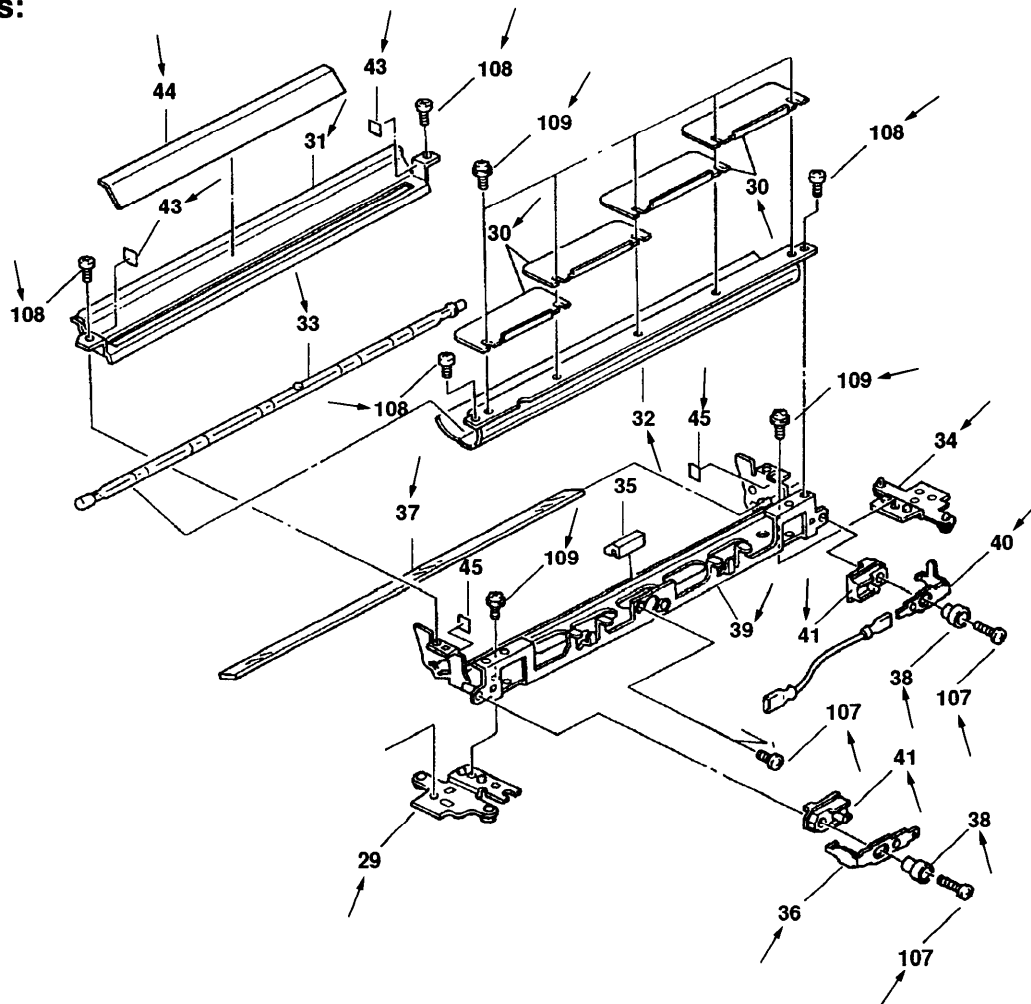
Continued...

Old Parts:

			REFERENCE	
OLD PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A0691869	Adjusting Plate Screw - M3 x 4	4-0	21	9
A0691868	Exposure Adjusting Plate - Side	2-0	21	10
A0691855	Exposure Adjusting Plate - Center	1-0	21	11
A0691856	Reflector	1-0	21	12
AX520014	Exposure Lamp - 85V/280W - 155V	1-0	21	13
AX530012	Exposure Lamp - 180V/310W - 230V	1-0	21	13
52151702	Clip - Exposure Lamp	1-0	21	14
A0691857	Reflector Cover	1-0	21	15
A0691861	Main Reflector	1-0	21	16
AC030059	1 st Mirror	1-0	21	17
54091705	Clamp - Reflector	2-0	21	20
A0691850	1 st Scanner	1-0	21	21
A0691858	Exposure Lamp Holder	2-0	21	24
A0481709	Thermostat Holder	1-0	21	25
A0695351	Extension Lamp Harness	1-0	21	27
03140050W	Philips Pan Head Screw - M4 x 5	X-2	21	100
03130040W	Philips Pan Head Screw - M3 x 4	X-7	21	102
03530080W	Tapping Screw - M3 x 4	X-2	21	104
09513010W	Philips Screw with Flat Washer - M3 x 10	X-2	21	105

Continued...

New Parts:



Continued...

New Parts:

				REFERENCE	
NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0851663	Front Side Plate	1	3/S	21	29*
A0851670	Exposure Adjusting Plate	4	3/S	21	30*
A0851665	1 st Scanner Stay	1	3/S	21	31*
A0851861	Main Reflector	1	3/S	21	32*
AX530016	Exposure Lamp - 180V/310W (230V)	1	3/S	21	33*
AX520015	Exposure Lamp - 85V/280W (115V)	1	3/S	21	33*
A0851664	Rear Side Plate	1	3/S	21	34*
A0851705	1 st Mirror Cushion	1	3/S	21	35*
A0851672	Front Lamp Terminal	1	3/S	21	36*
AC030087	1 st Mirror	1	3/S	21	37*
A0851669	Support Bushing	1	3/S	21	38*
A0851661	1 st Scanner Frame	1	3/S	21	39*
A0851667	Rear Lamp Terminal	1	3/S	21	40*
A0851668	Terminal Supporter	2	3/S	21	41*
A0855360	Extension Lamp Harness	1	3/S	21	42*
A0851673	Small Reflector - 230V ONLY	2	3/S	21	43*
A0851666	Reflector	1	3/S	21	44*
A0851671	Large Reflector	2	3/S	21	45*
09503008W	Philips Screw with Lock Washer - M3 x 8	X+4		21	107*
03130060W	Philips Pan Head Screw - M3 x 6	X+4		21	108*
09513006W	Philips Screw with Flat Washer - M3 x 6	X+7		21	109*

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032080000 and A3042080000 respectively will have the new parts installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-009

12/3/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: DEVELOPMENT MIXING AUGER SHAFT

SYMPTOM:

Uneven side-to-side toner density appears on copies and a grinding noise emitted from the black development unit. Continuous use in this condition will result in very light copies.

CAUSE:

The mixing auger shaft breaks at the weld causing the auger not to rotate. This may result in loss of gear mesh with the paddle roller gears causing the paddle roller not to rotate and the loss of toner supply to the magnetic roller.

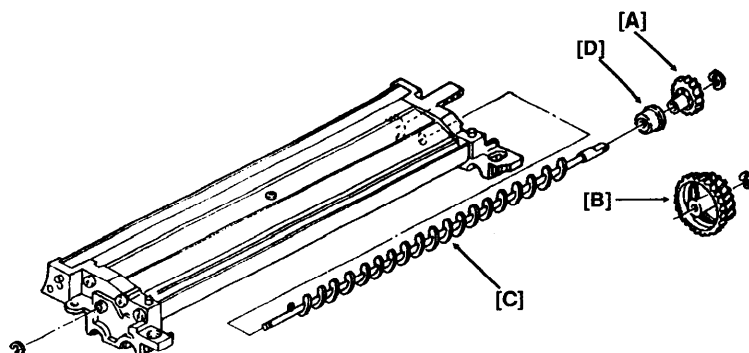
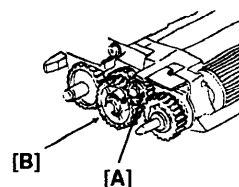
FIELD COUNTERMEASURE:

Install the modified mixing auger (P/N AD037034) and bushing (P/N 52053103) and replace the 19Z gear (P/N AB013694) if worn.

NOTE: *The Technical Service Hotline has a limited supply of augers with the pin plug available for emergency cases.*

REPLACEMENT PROCEDURE:

1. Remove the development unit from the copier.
2. Remove/discard the developer from the development unit as metal filings may contaminate the developer.
3. Remove the gear [A] from the mixing auger shaft (1 E-ring).
4. Remove the paddle roller gear [B] (1 E-ring).
5. Pull out the mixing auger [C] from the rear side of the development unit together with the bushing [D] (1 E-ring at the front).



Continued...

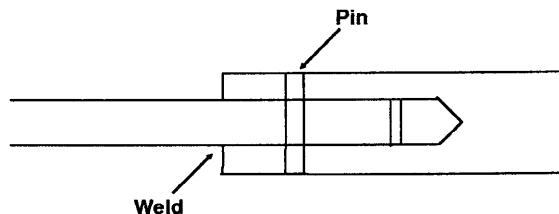
6. Install the new mixing auger and bushing.

NOTE: *Ensure not to damage the inside seal when inserting the bushing on the shaft.*

7. Install the paddle roller gear and the mixing auger gear (replace the gear if necessary).
8. Clean the development unit gears and lubricate them with Silicone Grease G-40M.
9. Install new developer into the development unit.
10. Install the development unit in the copier and access the SP mode by turning on the main switch while pressing both "1" and "3".
11. Refer to the Field Service Manual for the developer replacement procedure (Page 5-24).
12. Exit the SP mode by turning the main switch "OFF" and "ON", then verify copy quality.

PRODUCTION COUNTERMEASURE:

1. The method of welding the mixing auger has been changed from solder to TIG which increases the strength approximately 2.5 times. The material of the new bushing will resist developer penetration between the shaft and bushing.
2. The auger will have a pin plug to further increase the strength of the weld.



UNITS AFFECTED:

1. All FT5433/5733 copiers manufactured after Serial Numbers A3032070000 and A3042070000 respectively will have the modified mixing auger and bushing installed during production.
2. All FT5433/5733 copiers manufactured after Serial Numbers A3032120000 and A3042120000 will have the auger with pin plug installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-010

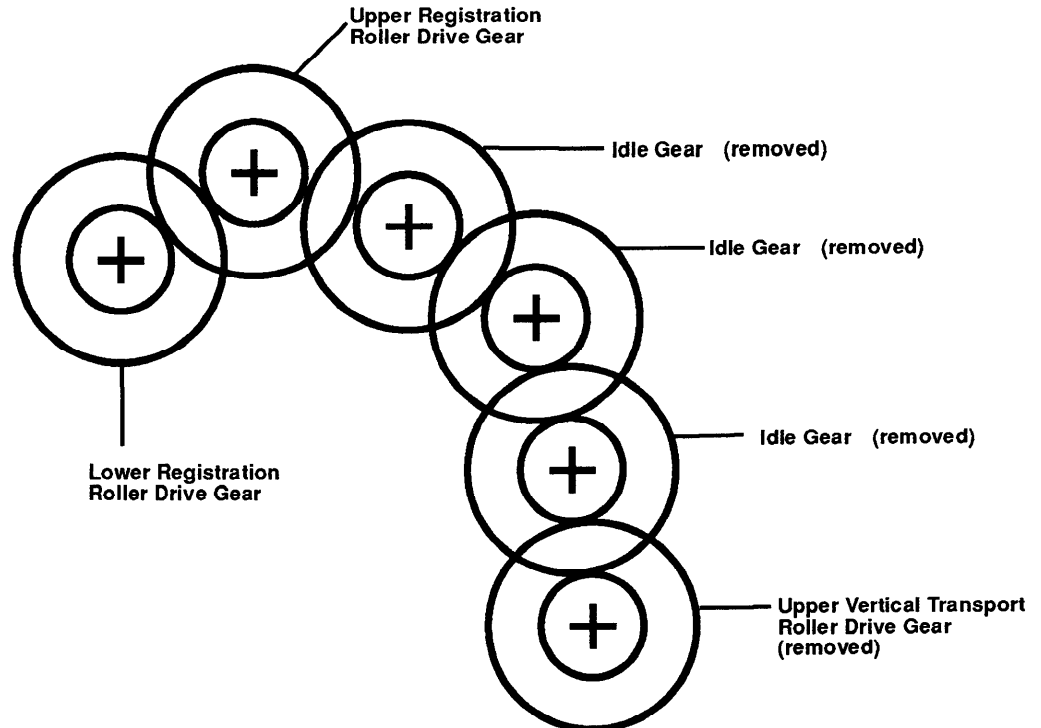
12/3/92

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: REGISTRATION/VERTICAL TRANSPORT

GENERAL:

The upper transport drive gear and three idle gears have been removed to reduce the mechanical load during manual rotation of the registration knob. Retain this information with all 5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.



OLD PART NO.	DESCRIPTION	QTY	REFERENCE	
			PAGE	ITEM
AB013488	Gear - 20Z	1-0	45	37
AB013491	Gear - 20Z	1-0	47	22
AB013489	Gear - 14Z	1-0	47	23
AB013490	Gear - 20Z	1-0	47	24
07200060E	Retaining Ring - M6	X-3	45	107
07200030E	Retaining Ring - M3	X-1	47	106

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032060228 and A3042070000 respectively will have the four gears removed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-011

2/25/93

APPLICABLE MODEL: FT5433/5733 COPIERS

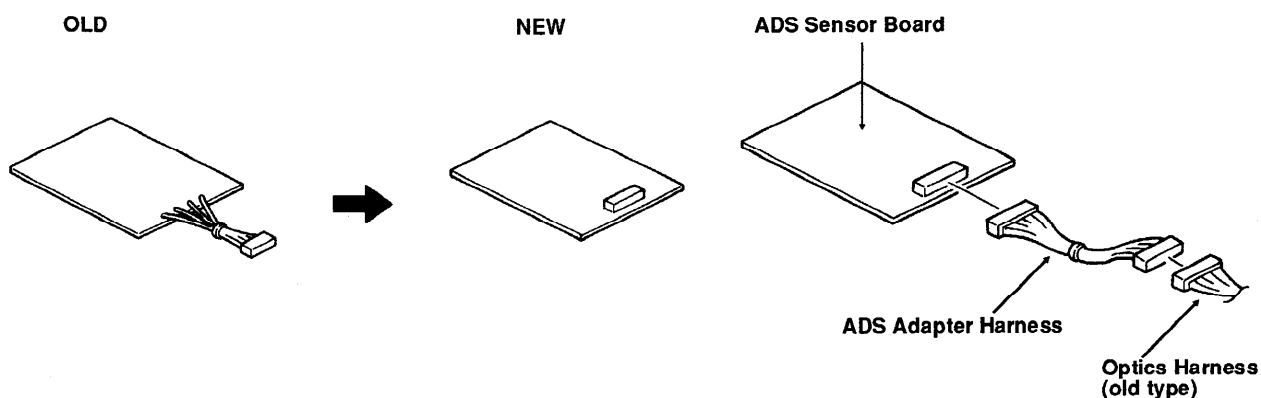
SUBJECT: PARTS CATALOG UPDATE

GENERAL:

Retain this information with all 5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

- **UPDATE NO. 1 - ADS SENSOR BOARD** - The ADS sensor board and optics harness have been modified as follows to facilitate assembly.
 - The ADS sensor board harness has been eliminated
 - The optics harness has been extended to accept the ADS sensor board in machines produced after the serial number cut-in

NOTE: *The new style ADS sensor board can only be installed on an old machine by the use of the ADS adapter harness.*



INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0695231	A0695261	ADS Sensor Board	1-1	3/S	23	1
	A0699017	ADS Adapter Harness	1		23	27*

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3032060000 and A3042060000 respectively will have the new type ADS sensor board installed during production.

- **UPDATE NO. 2 - TIMING PULLEYS** - The welding process has been changed from heat to ultrasonic to improve reliability.

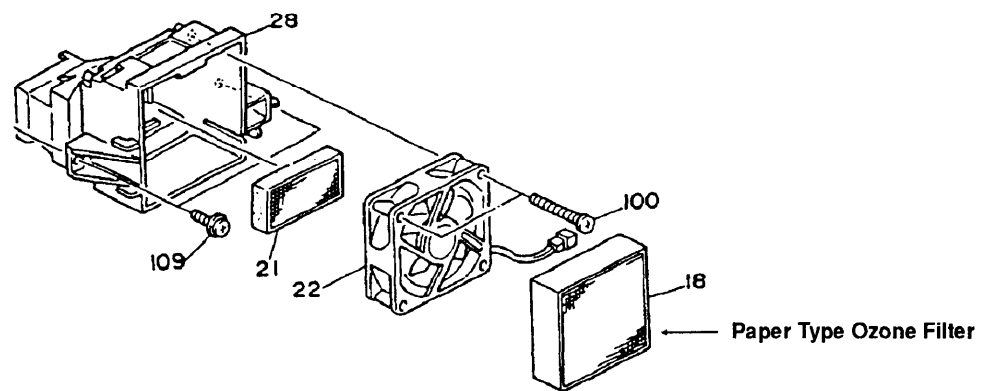
					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB030271	AB033056	Timing Pulley - 24Z	1-1	1	27	3
AB030272	AB033057	Timing Pulley - 48Z	1-1	1	27	5

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A303210XXXX and A3042100000 respectively will have the new style pulleys installed during production.

- **UPDATE NO. 3 - OZONE FILTER** - The paper type ozone filter has been eliminated since the permanent ceramic filter maintains the required ozone emission level.

Continued...



			REFERENCE	
PART NO.	DESCRIPTION	QTY	PAGE	ITEM
AA010052	Ozone Filter	1-0	83	18

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A303210XXXX and A3042100000 respectively will have the paper type ozone filter eliminated from production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-012

3/11/93

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: MAIN CONTROL BOARD

GENERAL:

The main ROM has been upgraded from 1M to 2M-byte to enable ST24 operation. Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0705141	A0705145	Main Control Board	101	1	89/103	10/*
A0695114		IC - HN27C101G - 20	1-0		89/103	5/2
	A0705114	IC - 27C020 - 150	1	1	89/103	5/2

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A303211XXXX and A3042110000 respectively will have the updated ROM installed during production.

Note:
This copy intended as master or original for reproduction
of additional bulletins.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-013

4/15/93

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: FSM - INSERT

GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 5 sets of replacement page(s).

PAGES:

The revised areas have been highlighted by an arrow. ⇒

- 4-43 Updated Information
- 5-110 Updated Information

Note:
This copy intended as master or original for reproduction
of additional bulletins.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-014 REISSUE ★
APPLICABLE MODEL: FT5733

8/9/93

SUBJECT: TRAY HEATER LOCATION

SYMPTOM:

Duplex tray can not be pulled out.

CAUSE:

Deformation of the bottom part of the duplex tray caused by heat from the tray heater when the copier is not used for a long period of time (approximately one week).

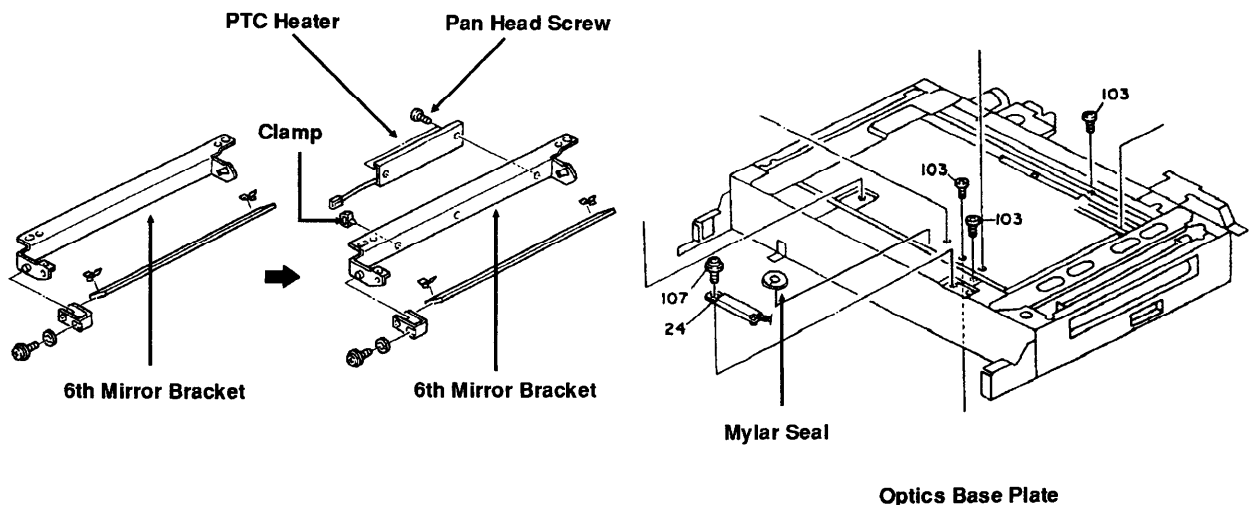
FIELD COUNTERMEASURE:

Disconnect the upper tray heater in areas with low humidity. (Refer to section 2.5 "Tray Heater Installation" Page 3-21 of the FT5433/5733 Service Manual).

Change the location of the tray heater from the upper tray to the lower tray in areas with high humidity.

★ PRODUCTION COUNTERMEASURE:

The upper tray heater and its bracket have been removed. The new heater (called the PTC Heater) has been installed on the 6th mirror bracket. Also, a mylar seal has been added on the optics base plate to cover the hole for the heater harness.



Continued...

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
AX400021		Anti-condensation Heater - 115V 18W	1 → 0	77	16
AX400022		Anti-condensation Heater - 240V 18W	1 → 0	77	16
A0692812		Tray Heater Bracket	1 → 0	77	17
11050199		Clamp	n → n-1	77	104
AA000015		Decal - High Temperature	1 → 0	77	18
04340060W		Tapping Screw - M4 x 6	n → n-2	77	105
04340080W		Tapping Screw - M4 x 8	n → n-1	77	101
	AX400040	PTC Heater - 100/115V 10W	0 → 1	23	28
	AX400041	PTC Heater - 230V 10W	0 → 1	23	28
	AA152312	Seal - 5 x 25 x 0.2	0 → 1	23	29
	03140080W	Philips Pan Head Screw - M4 x 8	0 → n	23	109*
	11050199	Clamp	0 → n	23	110*

* DENOTES NEW ITEM

UNITS AFFECTED

All FT5433/5733 copiers manufactured after Serial Number A303305XXXX and A3043010001 respectively will have the new style heater and related hardware installed during production.

BULLETIN NUMBER: 5433/5733-015 REISSUE ★
APPLICABLE MODEL: FT5433/5733 COPIERS

03/14/94

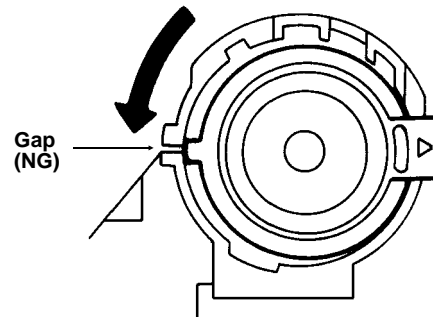
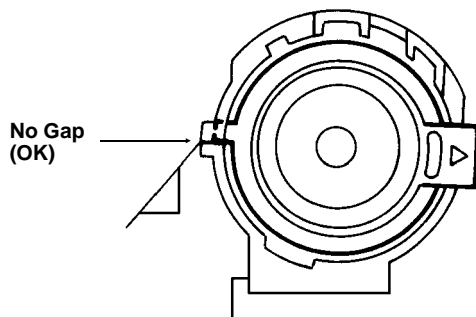
SUBJECT: REPEATED ADD TONER INDICATION

SYMPTOM:

The "Add Toner" indication lights even after installing a new toner cartridge.

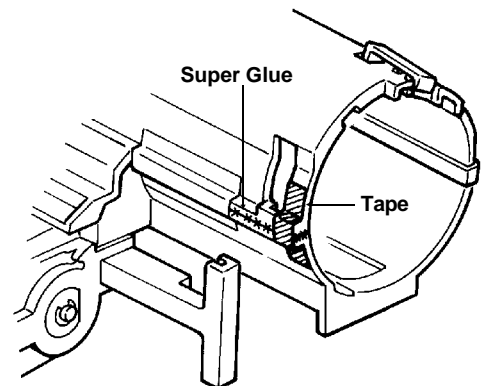
CAUSE:

The toner supply opening of the toner cartridge does not match the toner supply roller opening causing no toner to be supplied. This occurs when a toner cartridge is forced to turn or when it is turned by being pressed to the right side, the upper and lower casings will warp creating a gap at the front left side.



FIELD COUNTERMEASURE:

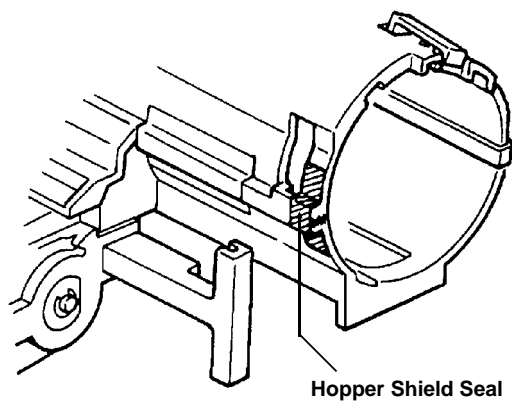
1. Remove the toner cartridge from the toner supply unit.
2. Clean the upper and lower casings at the front left side with a dry cloth, then adhere the upper and lower casings with super glue as illustrated.
3. Since it may take twenty to thirty minutes for the super glue to dry, stick a strip of tape on the toner supply unit casing as illustrated.
4. Reinstall the toner cartridge and verify operation.



Continued...

★ **PRODUCTION COUNTERMEASURE:**

A seal has been added to reinforce the toner hopper as shown below.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
AA150348	Hopper Shield Seal	0 → 1	55	31 *

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Number A3033060001 and A3043020001 respectively will have the Hopper Shield Seal installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-016

5/4/93

APPLICABLE MODEL: FT5433/5733 COPIERS

SUBJECT: BASE PLATE FEET

SYMPTOM:

Noise generated between the tray unit drive and driven gears [A and B].

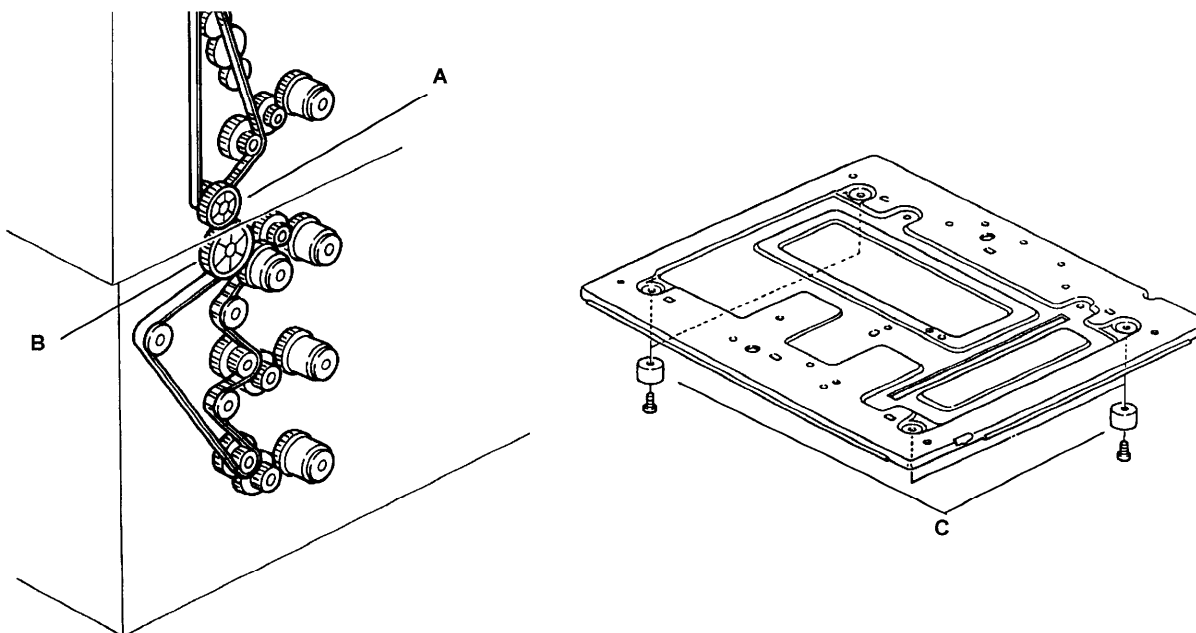
CAUSE:

When the copier is installed on the paper tray unit, the rubber feet [C] are compressed by the copiers weight, causing a tight mesh between the tray unit drive gear and driven gear (A and B).

SOLUTION:

The material of the copier base plate feet (P/N AH010007) has been changed from soft to hard rubber.

NOTE: Machine slippage may occur if the copier is placed directly on a table other than its unique table or paper tray. If this occurs, adhere double sided tape to each foot.



UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A303206XXXX and A304206XXXX respectively will have the hard rubber feet installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-017

07/02/93

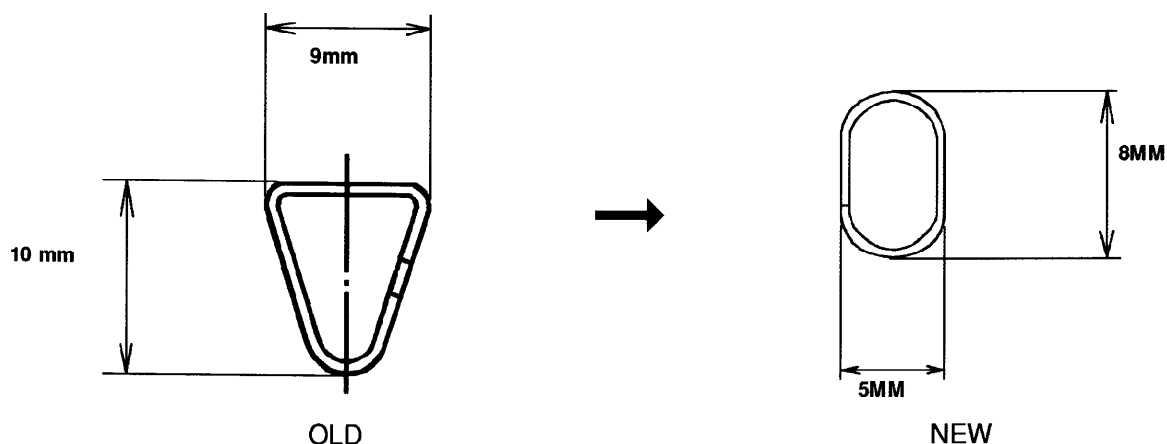
APPLICABLE MODEL: FT5433/5733

SUBJECT: PARTS CATALOG UPDATE

GENERAL:

Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

- **UPDATE NO. 1 - CHAIN HOOK** - To ensure the LCT stopper chain is positioned properly, the shape of the chain hook has been changed from a triangle to an oval.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A3351341	A3401488	Chain Hook	2	1	41	11

UNITS AFFECTED:

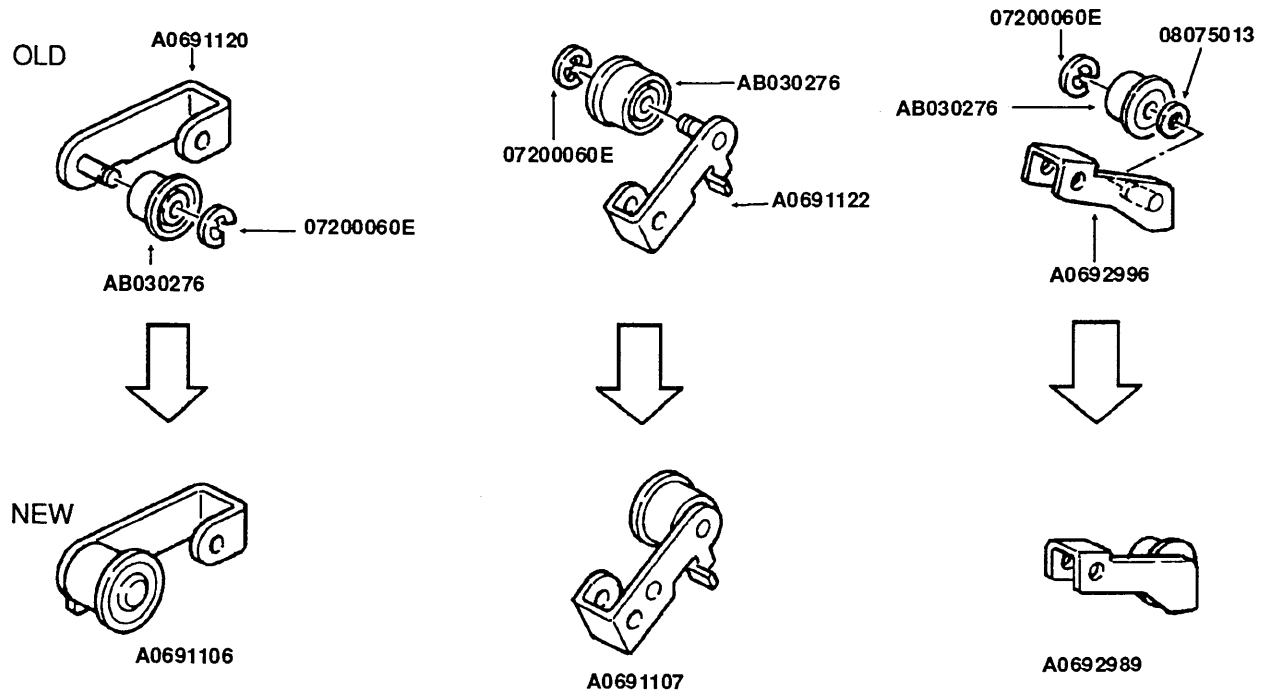
All FT 5433/5733 copiers manufactured after serial numbers A3032080001 and A3042080001 respectively will have the oval shape chain hook installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

- **UPDATE NO. 2** BELT TIGHTENER - To standardize these parts with that of the FT4727, the following belt tighteners have been made available as assemblies.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0691120		Belt Tightener - Main Drive	2		83	11
AB030276		Tightener Pulley	2		83	9
07200060E		Retaining Ring - M6	1		83	102
	A0691106	Belt Tightener - Main Drive	1	0	83	11
A0691122		Belt Tightener - Paper Feed	1		83 85	13 9
AB030276		Tightener Pulley	1		83 85	9 10
07200060E		Retaining Ring - M6	1		83 85	102 104
	A0691107	Belt Tightener - Paper Feed	1	0	83 85	13 9

Continued...

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0692996		Timing Belt Tightener	1		85	25
AB030276		Tightener Pulley	1		85	10
07200060E		Retaining Ring - M6	1		85	104
08075013		Flat Washer - M8.4	1		85	111
	A0692989	Timing Belt Tightener	1	0	85	25

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A303305XXXX and A3042090001 respectively will have the assembly type belt tighteners installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733-018

7/21/93

APPLICABLE MODEL: FT5433/5733

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with this revision is distributed.

- **UPDATE NO. 1-** GEAR 18Z - To improve durability, the ball bearing press-fit into the gear has been slightly modified.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB013561	AB013860	Gear - 18Z	1-1	1	85	4

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A303305XXXX and A3043020001 respectively will have the new style gear installed during production.

- **UPDATE NO. 2-** ENTRANCE SEAL - As per field request, the development unit entrance seal has been made available as a service part.

			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0693070	Entrance Seal	1	53	17 *
03130050G	Phillips Pan Head Screw - M3 X 5	1	53	105 *

* DENOTES NEW ITEM

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: 5433/5733-019
APPLICABLE MODEL: FT5433/5733

9/15/93

SUBJECT: SC63 - EXHAUST BLOWER MOTOR ERROR

SYMPTOM:

SC63 is illuminated.

CAUSE:

If the exhaust blower motor is de-energized and then re-energized prior to coming to a complete stop it can take over 2 seconds to re-start the motor. If this occurs, SC63 will be displayed.

SOLUTION:

The inner magnet alignment of the motor has been modified.

NOTE: *The description of the motor has been changed from the "Transfer Fan Motor" to the "Exhaust Blower Motor".*

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AX640027		Transfer Fan Motor - DC4.8W	1	1	83	22
	AX640046	Exhaust Blower Motor - DC4.1W				

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Numbers A3033060001 and A3043040587 respectively will have the new style blower motor installed during production.

BULLETIN NUMBER: 5433/5733-020
APPLICABLE MODEL: FT5433/5733

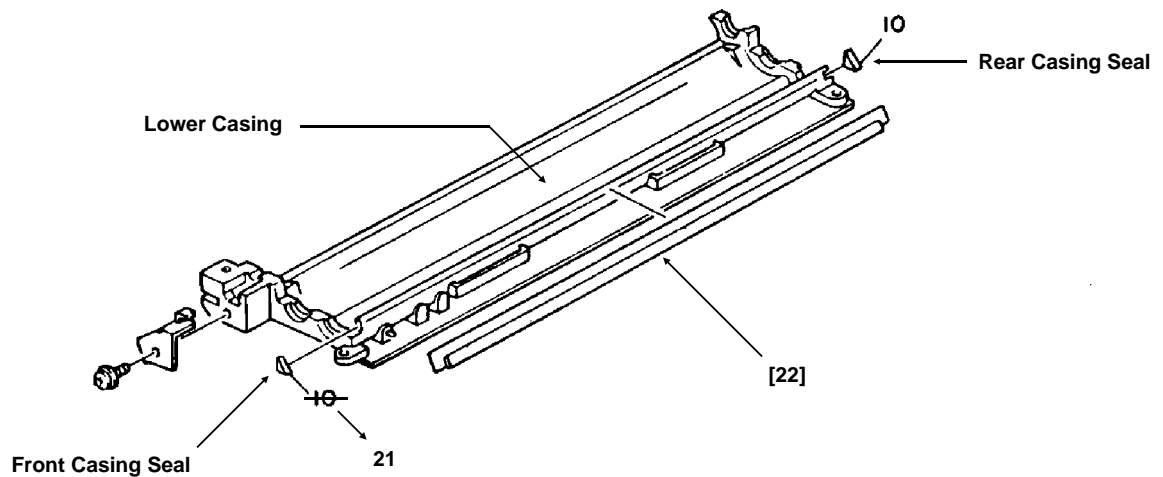
10/29/93

SUBJECT: PARTS CATALOG UPDATE

GENERAL:

Retain this information with all FT5433/5733 Parts Catalog documentation until a new micropublications package with these revisions is distributed.

- **UPDATE NO. 1 - COLOR DEVELOPMENT UNIT CASING SEALS** - The front side color development casing seal has been changed and seal [22] has been registered as a service part. The rear side casing seal remains the same as before.



			REFERENCE	
PART NUMBER	DESCRIPTION	QUANTITY	PAGE	ITEM
AA151188	Rear Casing Seal	2 → 1	57	10
AA151187	Front Casing Seal	1	57	21 *
AA151139	Seal - 2 x 15 x 344mm	1	57	22 *

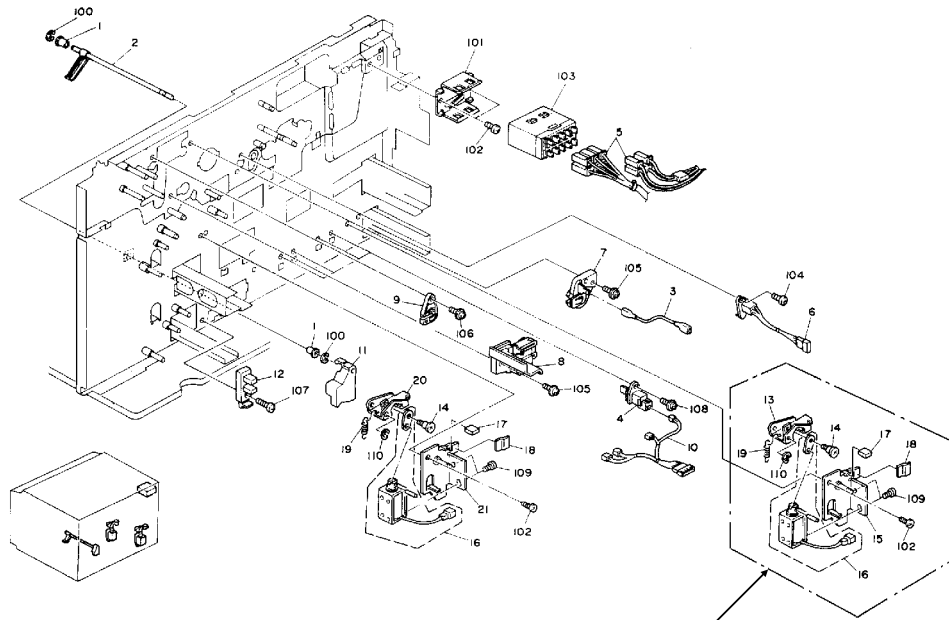
* DENOTES NEW ITEM

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

- **UPDATE NO. 2 - TRAY LOCK SOLENOID ASSEMBLY** - Considering that customers seldom or never pull out the paper tray being used during copy jobs, the tray lock solenoid assembly has been eliminated. The duplex tray lock solenoid assembly though, remains as it was.



The Tray Lock Solenoid Assembly has been eliminated

OLD PART NO.	DESCRIPTION	QTY		REFERENCE	
		FT5433	FT5733	PAGE	ITEM
A0692837	Tray Lock Lever	2 → 0	1 → 0	93	13
AA143062	Shoulder Screw - M4	2 → 0	2 → 1	93	14
A0692774	Bracket - Tray Lock Solenoid	2 → 0	1 → 0	93	15
A0692773	Tray Lock Solenoid	2 → 0	2 → 1	93	16
AA161016	Cushion - Fork Gate	2 → 0	2 → 1	93	17
A0692834	Slide Sheet	2 → 0	2 → 1	93	18
AA060436	Tray Lock Spring	2 → 0	2 → 1	93	19
04340080W	Tapping Screw - M4 x 8	n → n-2	n → n-1	93	102
03130040W	Philips Pan Head Screw-M3 x 4	n → n-4	n → n-2	93	109
07200040E	Retaining Ring - M4	n → n-2	n → n-1	93	110

UNITS AFFECTED:

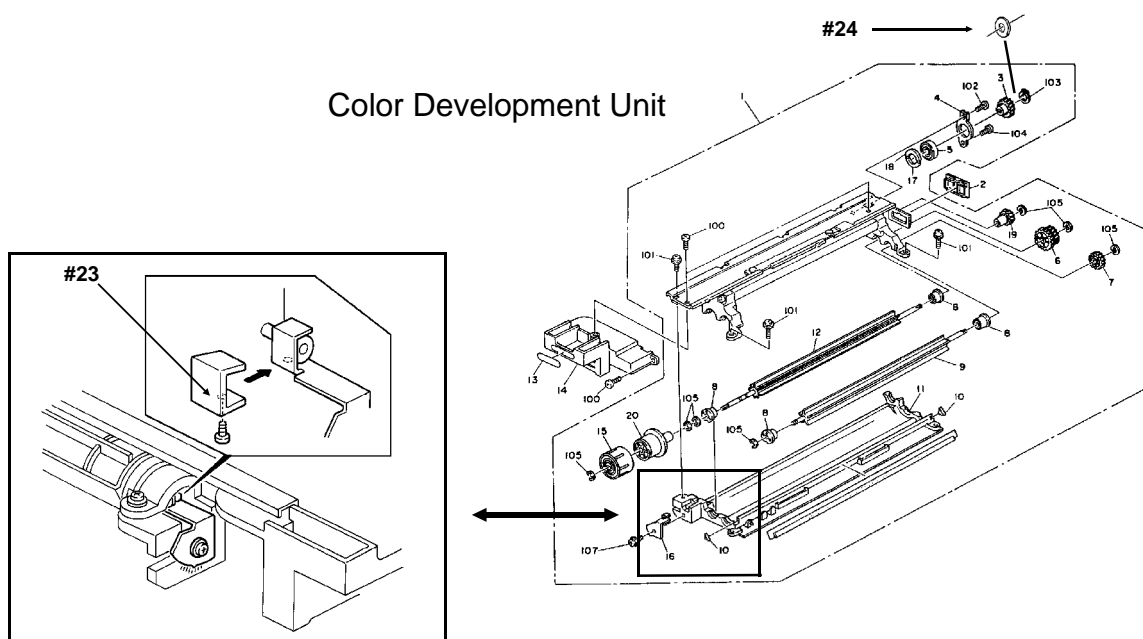
All FT5433/5733 copiers manufactured after Serial Number A3032080001 and A3042080001 respectively will have the Tray Lock Solenoid Assembly removed during production.

Continued...

- **UPDATE NO. 3 - COLOR DEVELOPMENT UNIT** - If the inner magnet shaft of the color development roller shifts to the rear, the development roller sleeve may be locked on the inner magnet shaft. To prevent this from occurring, one of the following two modifications have been applied:

[A] To ensure holding the inner magnet shaft at the front, the development roller holder (#23) and a spacer (#24) have been added as shown.

[B] The inner bushing of the color development unit has been changed to a ball bearing type so that the development roller sleeve won't lock on the inner magnet shaft.



UNITS AFFECTED:

All CU150 color development units manufactured between Serial Number 20800376 and 30600026 will have the Development Roller Holder and Spacer installed during production. All CU150 color development units manufactured after Serial number 306000026 will have the new style bearing installed during production.

ORDERING PROCEDURE:

Technical Services has a limited supply of the Development Roller Holder Kits described in section A of UPDATE NO. 3 for use in older machines (Prior to the 20800376 Serial Number cut-in). To obtain the Development Roller Holder Kit at no charge, please complete and fax the attached form to Technical Services.

NOTE: *This limited supply will not be replenished and there is no indication that these parts will become available as service replacement parts.*

Continued...

CU150 COLOR DEVELOPMENT UNIT

SUBJECT: DEVELOPMENT ROLLER HOLDER KIT

Fax this entire page in "DETAIL" mode ATTN: Technical Services - Copiers

FAX Number: (201) 882-3960

Each serial number given will represent a request for one Roller Holder Kit.

Serial Number (s)	
1	
2	
3	
4	
5	

All serial number information will be verified before shipment is made.

RETURN SHIPPING LABEL - PLEASE TYPE OR PRINT CLEARLY.

FROM: Ricoh Technical Services, 155 Passaic Avenue, Fairfield, NJ 07004		
NAME:		
ADDRESS:		
CITY:	STATE:	ZIP CODE:
ATTENTION:	PHONE # :	
DEALER ACCOUNT NUMBER:		

BULLETIN NUMBER: 5433/5733-021
APPLICABLE MODEL: FT5433/5733

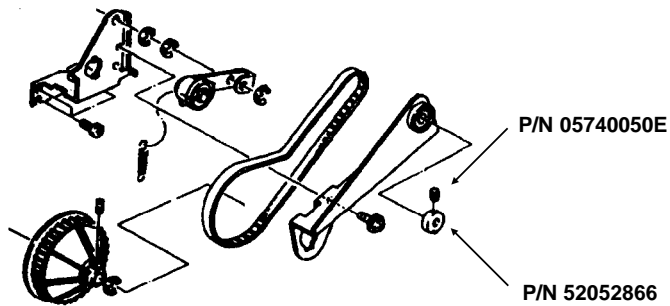
04/04/94

SUBJECT: PARTS CATALOG UPDATES

- **UPDATE NO. 1 -** TIMING BELT/HEATER HOLDERS - Due to part standardization, the following parts have been changed:

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AA043116	H0063350	Timing Belt - 9 x 420	1 → 1	0	83	7
		Main Drive Belt - S3M				
A0694105	A0694175	Front Heater Holder	1 → 1	0	67	2
A0694117	A0694176	Rear Heater Holder	1 → 1	0	67	37

- **UPDATE NO. 2 -** MAIN DRIVE SECTION - To improve reliability, a collar has been added to fix the main drive pulley.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
52052866	Magnetic Clutch Collar	0 → 1	83	29 *
05740050E	Hexagon Headless Set Screw - M4 x 5	0 → 1	83	111 *

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Number A303211XXXX and A3042110001 respectively will have the new Magnetic Clutch Collar installed during production.

Continued...

- **UPDATE NO. 3 -** PAPER SIZE DECALS - To facilitate manufacturing and servicing, the paper size decals have been removed. In place of the decals, the paper size indications have been inscribed on the paper tray.

			REFERENCE	
OLD PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
AA002138	Decal - Paper size - A4	1 → 0	33 119	10 18
AA002137	Decal - Paper size - LT	1 → 0	33 119	10 18
AA002136	Decal - Paper size - A4	1 → 0	33 119	11 17
AA002135	Decal - Paper size - LT	1 → 0	33 119	11 17

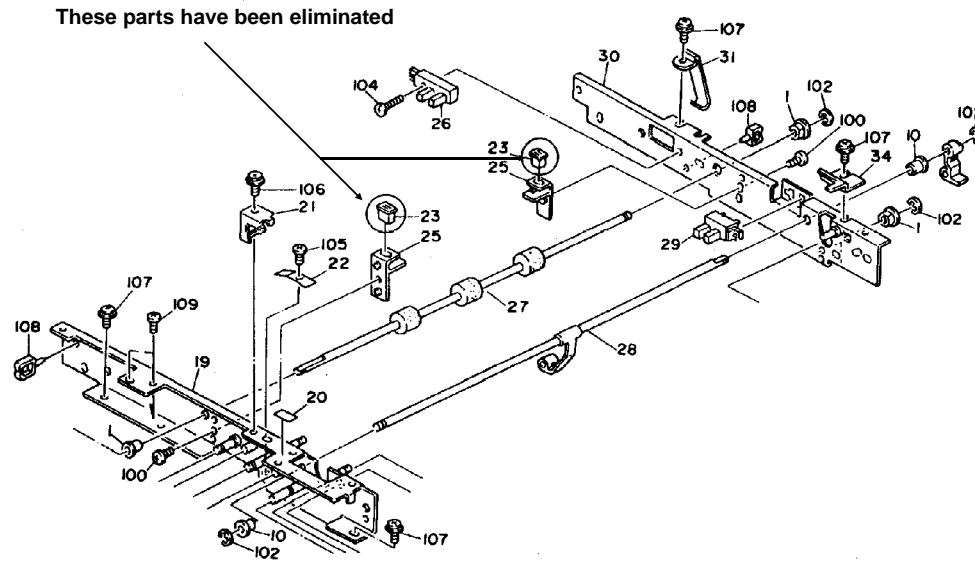
NOTE: These decals are available as service replacement parts.

- **UPDATE NO. 4 -** PARTS CATALOG CORRECTION - Please correct your parts catalog as follows:

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A3344666		Mylar Seal - 0.2 x 9 x 16	1 → 1	95	44
	A3344678	Rack Shield Mylar			
A0691479	A0731479	Insulating Mylar	1 → 1	17	9

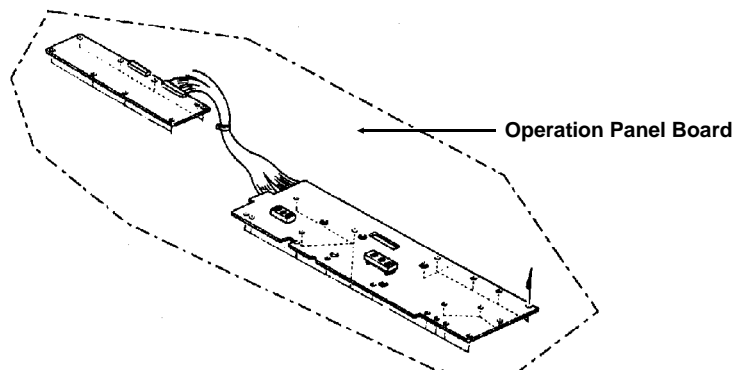
- **UPDATE NO. 5 -** GUIDE PLATE STOPPER MAGNETS - Since it has been determined that the magnets on the Guide Plate Stoppers do not affect paper transportation, they have been eliminated from production machines.

Continued...



			REFERENCE	
OLD PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0493371	Magnet	2 → 0	99	23

- **UPDATE NO. 6 -** OPERATION PANEL BOARD/OPERATING INSTRUCTIONS - As per field request, the operation panel board illustrated below and the operating instructions for the sorter stapler have been registered as service parts.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0735154	Operation Panel Board - LT (FT5433)	0 → 1	17	49 *
A0735164	Operation Panel Board - A4 (FT5433)	0 → 1	17	49 *
A0745154	Operation Panel Board - LT (FT5733)	0 → 1	17	49 *
A0745164	Operation Panel Board - A4 (FT5733)	0 → 1	17	49 *
A0738607	Operating Instructions - ST24 Sorter Stapler	0 → 1	119	35 *

* DENOTES NEW ITEM

BULLETIN NUMBER: 5433/5733-022
APPLICABLE MODEL: FT5433/5733

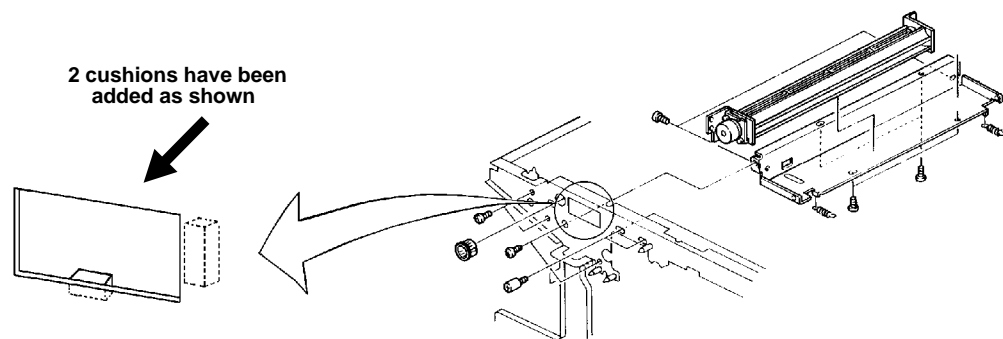
04/04/94

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued to update all FT5433/5733 Parts Catalogs. This information should be incorporated into all existing FT5433/5733 Parts Catalog documentation.

- **UPDATE NO. 1 - FAN VIBRATION** - To reduce the vibration of the optics cooling fan, two cushions have been added on the inner side of the front optics frame.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A3522608	Cushion	0 → 2	79	18*

* DENOTES NEW ITEM

UNITS AFFECTED:

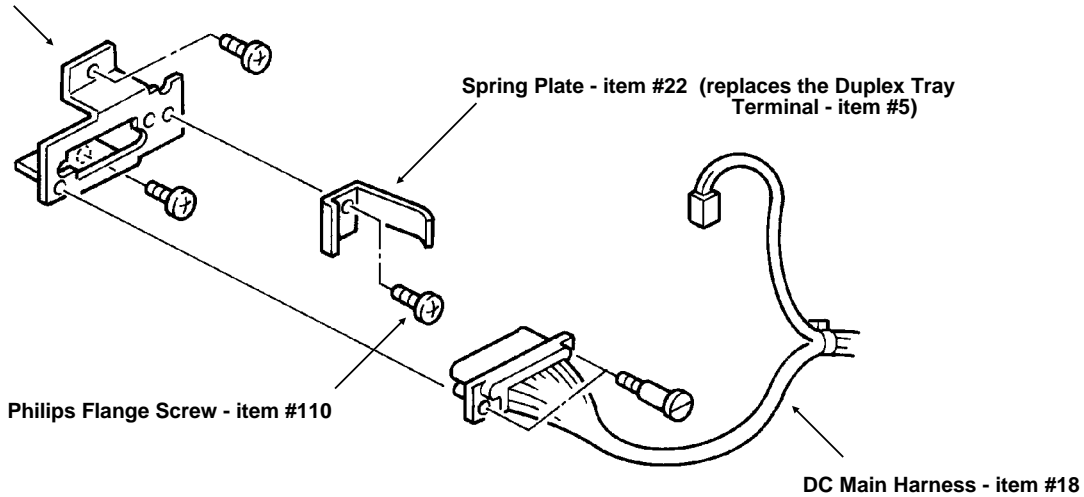
All FT5433/5733 copiers manufactured after Serial Number A303306XXXX and A3043040001 respectively will have the new cushions installed during production.

● **UPDATE NO. 2 -**

DUPLEX TRAY TERMINAL/SPRING PLATE - The Duplex Tray Terminal, which functions to ensure grounding the duplex tray to the main body, is not necessary because of a modification to the PCB before mass-production and has been removed. Without the Duplex Tray Terminal installed, the Left Rail can contact the DC Power Supply Board resulting in noise. To prevent this, a Spring Plate [A] has been added as illustrated on page 2.

Continued...

Duplex Connector Bracket - item #4



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A0704855		Duplex Tray Terminal	1 → 0	91	5
03130060W		Philips Pan Head Screw M3 x 6	n → n - 1	91	109
	A0704857	Spring Plate	0 → 1	91	23*
	09603006W	Philips Flange Screw - M3 x 6	n → n + 1	91	115*

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Number A3033110001 and A3043110001 respectively will have the new Spring Plate installed in place of the Duplex Tray Terminal during production.

- **UPDATE NO. 3 -** LCD CONTROL BOARD - As per field request, the guidance display on the LCD control board has been changed. When selecting the staple function in ADF Free Size mode, the message "Can only staple samewidth-sized copies" has been replaced with "Can only staple samesize copies".

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0705160	A0705158	LCD Control Board	1 → 1	1	17	16

UNITS AFFECTED:

All FT5733 copiers manufactured after Serial Number A3043070001 will have the new style LCD Control Board installed during production.

BULLETIN NUMBER: 5433/5733-023
APPLICABLE MODEL: FT5433/5733

04/15/94

SUBJECT: SEPARATION GUIDE

GENERAL:

The paper guide mylar has been added to the separation guide to ensure proper paper feed. This information should be incorporated into all existing FT5433/5733 Parts Catalog documentation.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0692566	A0692563	Separation Guide	1 → 1	1	35	30

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Number A303211XXXX and A3042090001 respectively will have the new style Separation Guide installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

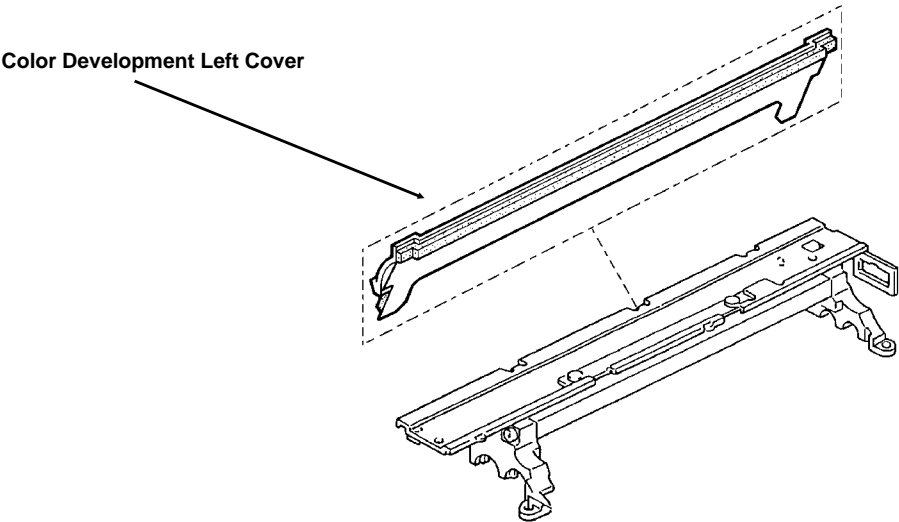
BULLETIN NUMBER: 5433/5733-024
APPLICABLE MODEL: FT5433/5733

12/13/94

SUBJECT: PARTS CATALOG CORRECTION

GENERAL:

Please add the following to your Parts Catalog:



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0693274	Color Development Left Cover	0 → 1	57	25 *

* DENOTES NEW ITEM

BULLETIN NUMBER: 5433/5733 - 025

08/16/95

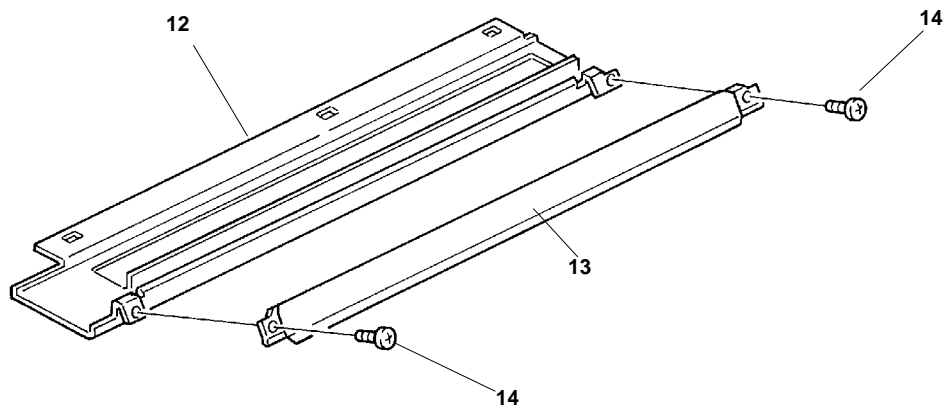
APPLICABLE MODEL: FT5433/5733

SUBJECT: PARTS CATALOG CORRECTIONS

GENERAL:

Correct your Parts Catalog as follows:

Correct the illustration on page 62



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
AD004068	A0692015	Charge Corona Unit	1 → 0	51	12
		Charge Corona Unit	0 → 1		
A0692170	AD023104	T/S Lower Guide	1 → 0	63	7
		T/S Corona Unit Casing	0 → 1	63	12
	A0692170	Guide Plate	0 → 1	63	13
	09523006W	Screw M3 x 6	0 → 2	63	14

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Note: This copy intended as master of original for reproduction of additional bulletins.

BULLETIN NUMBER: 5433/5733 - 026

08/16/95

APPLICABLE MODEL: FT5433/5733

SUBJECT: GEAR WEAR

SYMPTOM:

Fuser Entrance Misfeeds and/or noise.

CAUSE:

The inner bearing of the gear located on the Fusing Drive Bracket deteriorates.

SOLUTION:

Install the new style Gear - 18Z (AB013860).

SERVICE TIP:

As a preventative measure, it is recommended to inspect this gear on all units manufactured prior to the Serial Numbers listed below (especially those that have large meter readings) and replace as necessary. It is possible that a worn gear could damage the shaft on which it rides. This shaft is press-fit into the frame of the copier and is not available as a service part.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB013561	AB013860	Gear - 18Z	1 → 1	1	85	4

UNITS AFFECTED:

All FT5433/5733 copiers manufactured after Serial Number A303305XXXX and A3043020001 respectively will have the new style gear installed during production.

NOTE: This part modification was originally published in Technical Service Bulletin No. 5433/5733-018, dated 7/21/93.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

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BULLETIN NUMBER: 4427/4727/5433/5733 - 027

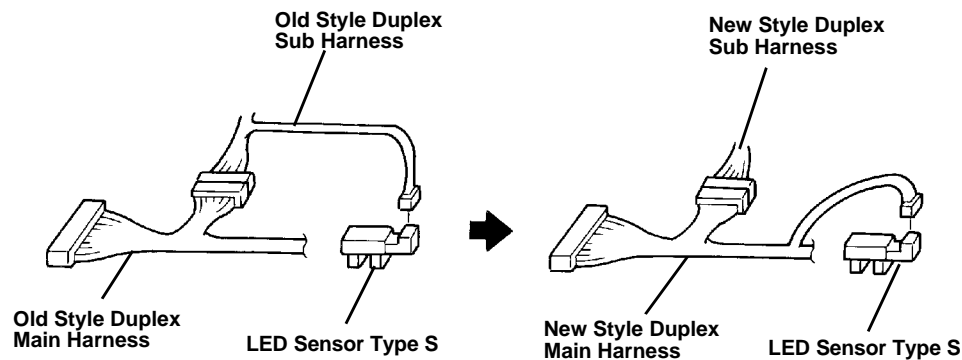
02/21/96

APPLICABLE MODEL: FT4727/5733

SUBJECT: DUPLEX HARNESS

GENERAL:

To facilitate assembly at the factory, the location of the connector for the LED Sensor type S (shown below) has been changed from the Duplex Sub Harness to the Duplex Main Harness. This information should be incorporated into all existing FT4427/4727/5433/5733 Parts Catalog documentation.



OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	REFERENCE		
					PAGE		ITEM
					FT4727	FT5733	
A3345331	A3345341	Sub Harness - Duplex	1 → 1	3/S	93	99	32
A3345330	A3345340	Main Harness - Duplex	1 → 1	3/S	89	95	2

UNITS AFFECTED:

All FT4727/5733 copiers manufactured after Serial Number A3174120078 and A3044120001 respectively will have the new style Duplex Harnesses installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

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☐ ELECTRICAL

☐ PAPER PATH

☐ F S M

☒ PARTS

☐ OTHER

BULLETIN NUMBER: 5433/5733 - 027 REISSUE ★

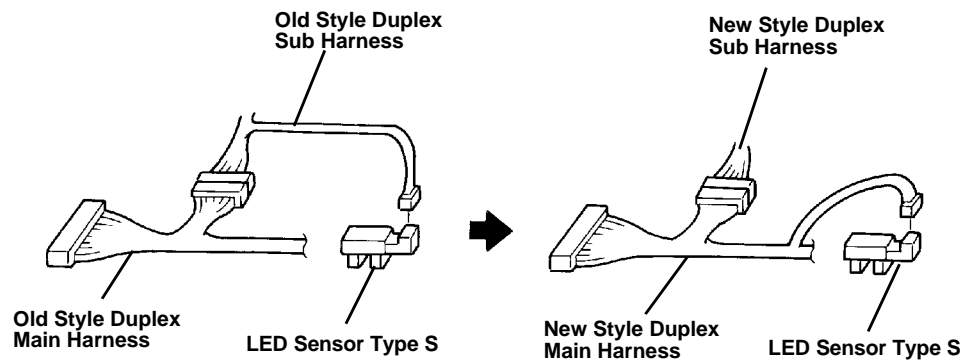
03/29/96

★ APPLICABLE MODEL: FT5733

SUBJECT: DUPLEX HARNESS

GENERAL:

To facilitate assembly at the factory, the location of the connector for the LED Sensor type S (shown below) has been changed from the Duplex Sub Harness to the Duplex Main Harness. This information should be incorporated into all existing FT5433/5733 Parts Catalog documentation.



REFERENCE

OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A3345331	A3345341	Sub Harness - Duplex	1 → 1	3/S	99	32
A3345330	A3345340	Main Harness - Duplex	1 → 1	3/S	95	2

UNITS AFFECTED:

All FT5733 copiers manufactured after Serial Number A3044120001 will have the new style Duplex Harnesses installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Note: This copy intended as master of original for reproduction of additional bulletins.

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☐ PAPER PATH

☐ F S M

☒ PARTS

☐ OTHER



CUSTOMER SERVICE GROUP

TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 5433/5733 - 028

06/28/96

APPLICABLE MODEL: FT5433/5733

SUBJECT: FIELD SERVICE MANUAL - INSERT

GENERAL:

The Field Service Manual page(s) listed below must be replaced with the page(s) supplied. Each bulletin package contains 2 sets of replacement pages.

PAGES:

The revised areas have been highlighted by an arrow ⇒

- 6-36a, 6-36b

Additional Information

Overtoneing / "Add Toner" / Light Copies

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for reproduction of additional bulletins.

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☐ PAPER PATH

☒ F S M

☐ PARTS

☐ OTHER

BULLETIN NUMBER: 5433/5733 - 029

07/25/96

APPLICABLE MODEL: FT5433/5733

SUBJECT: PARTS CATALOG CORRECTION

GENERAL:

The following correction is being issued for all FT5433/5733 Parts Catalogs:

				REFERENCE	
INCORRECT PART NO.	CORRECT PART NO.	DESCRIPTION	QTY	PAGE	ITEM
16020707	16027070	EMI Filter - NFM52R10P206	n	103	157

Note: This copy intended as master of original for reproduction of additional bulletins.

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☐ PAPER PATH

☐ F S M

☒ PARTS

☐ OTHER



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 4427/4727-001

2/25/93

APPLICABLE MODEL: FT4427/4727 COPIERS

SUBJECT: TIMING PULLEYS - 24Z AND 48Z

GENERAL:

The welding process has been changed from heat to ultrasonic to improve reliability. Retain this information with all 4427/4727 Parts Catalog documentation until a new micropublications package with this revision is distributed.

Note:
This copy intended as master or original for reproduction
of additional bulletins.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB030271	AB033056	Timing Pulley - 24Z	1-1	1	25	3
AB030272	AB033057	Timing Pulley - 48Z	1-1	1	25	5

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Numbers A3162100000 and A3172100000 respectively will have the new style timing pulleys installed during production.

BULLETIN NUMBER: 4427/4727-002 REISSUE ★
APPLICABLE MODEL: FT4427/4727 COPIERS

03/14/94

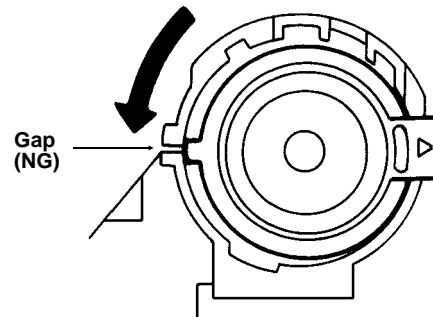
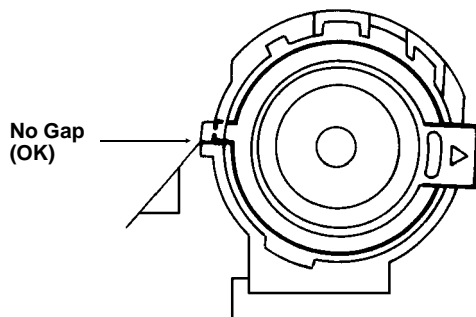
SUBJECT: REPEATED ADD TONER INDICATION

SYMPTOM:

The "Add Toner" indication lights even after installing a new toner cartridge.

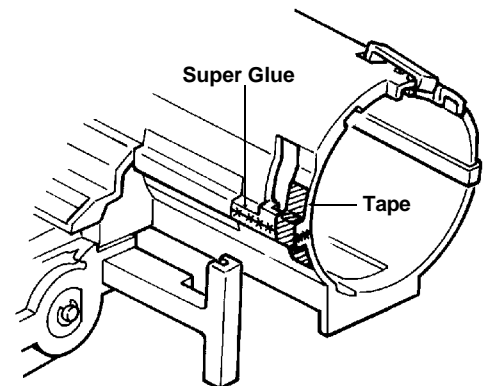
CAUSE:

The toner supply opening of the toner cartridge does not match the toner supply roller opening causing no toner to be supplied. This occurs when a toner cartridge is forced to turn or when it is turned by being pressed to the right side, the upper and lower casings will warp creating a gap at the front left side.



FIELD COUNTERMEASURE:

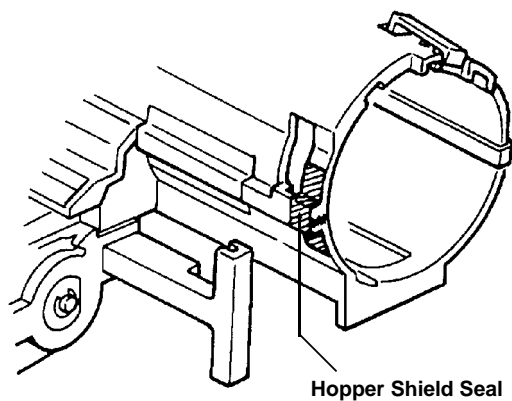
1. Remove the toner cartridge from the toner supply unit.
2. Clean the upper and lower casings at the front left side with a dry cloth, then adhere the upper and lower casings with super glue as illustrated.
3. Since it may take twenty to thirty minutes for the super glue to dry, stick a strip of tape on the toner supply unit casing as illustrated.
4. Reinstall the toner cartridge and verify operation.



Continued...

★ **PRODUCTION COUNTERMEASURE:**

A seal has been added to reinforce the toner hopper as shown below.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
AA150348	Hopper Shield Seal	0 → 1	53	31 *

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Number A3163020001 and A3173020001 respectively will have the Hopper Shield Seal installed during production.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 4427/4727-003

4/15/93

APPLICABLE MODEL: FT4727 COPIERS

SUBJECT: TRAY HEATER LOCATION

SYMPTOM:

Duplex tray can not be pulled out.

CAUSE:

Deformation of part of the duplex tray bottom caused by heat from the tray heater when the copier is not used for a long period of time (approximately one week).

FIELD COUNTERMEASURE:

Disconnect the upper tray heater in areas with low to medium humidity. (Refer to section 2.5 "Tray Heater Installation" Page 3-21 of the FT5433/5733 Service Manual)

Change the location of the tray heater from the upper tray to the lower tray in areas with high humidity.

PRODUCTION COUNTERMEASURE:

A new heater will be installed on the 6th mirror bracket and the upper tray heater will be eliminated during production.

Note:
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of additional bulletins.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 4427/4727-004

5/4/93

APPLICABLE MODEL: FT4427/4727 COPIERS

SUBJECT: BASE PLATE FEET

SYMPTOM:

The copier may slip or move easily when placed directly on a table other than its unique cabinet (438MIU) or paper tray (PS250).

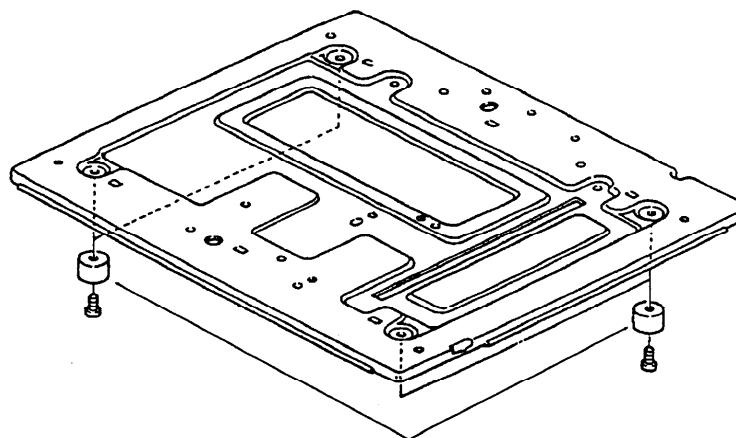
CAUSE:

The hard rubber material of the base plate feet.

SOLUTION:

Adhere double sided tape to each foot.

NOTE: *The hard rubber material is essential to support the machines weight. Therefore, do not attempt to install feet made of a soft rubber material.*



Base Plate Feet

UNITS AFFECTED:

All FT4427/4727 copiers exhibiting the above symptom.

Note:
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of additional bulletins.



TECHNICAL SERVICE BULLETIN

BULLETIN NUMBER: 4427/4727-005

7/21/93

APPLICABLE MODEL: FT4427/4727

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

Retain this information with all FT4427/4727 Parts Catalog documentation until a new micropublications package with this revision is distributed.

- **UPDATE NO. 1-** GEAR 18Z - To improve durability, the ball bearing press-fit into the gear has been slightly modified.

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AB013561	AB013860	Gear - 18Z	1-1	1	79	4

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Numbers A3163020001 and A3173020001 respectively will have the new style gear installed during production.

- **UPDATE NO. 2-** ENTRANCE SEAL - As per field request, the development unit entrance seal has been made available as a service part.

			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0693070	Entrance Seal	1	51	17 *
03130050G	Phillips Pan Head Screw - M3 X 5	1	51	105 *

* DENOTES NEW ITEM

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: 4427/4727-006
APPLICABLE MODEL: FT4427/4727

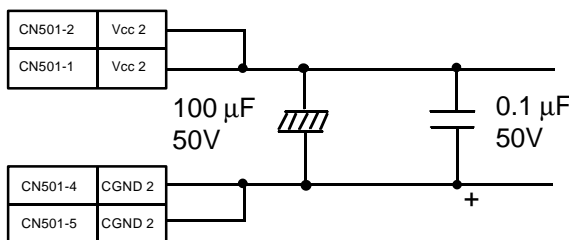
8/9/93

SUBJECT: PARTS CATALOG CORRECTION

GENERAL:

Retain this information with all FT4427/4727 Parts Catalog documentation until a new micropublications package with this revision is distributed.

- **UPDATE NO. 1 - OPERATION PANEL** - If the main power switch is turned on while the LCT or one or more of the paper trays is in a paper end condition, IC119 on the copier main board may be damaged resulting in an SC41 condition. This occurs because a high amount of current is drawn when the tray lift motor is energized at the same time the operation panel LEDs are initialized. To prevent damage to IC119, two capacitors have been soldered in parallel between CN501-1 (Vcc2) and CN501-4 (CGND 2) on the operation panel.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A0871478	A0871479	4427 Operation Panel Board-LT	1-1	1	15	34
A0871518	A0871519	4427 Operation Panel Board-A4				
A0881498	A0881499	4727 Operation Panel Board-LT				
A0881518	A0881519	4727 Operation Panel Board-A4	1-1	1	15	*
A0875550	A0875551	4427 Operation Panel Ass'y-LT				
A0875650	A0875651	4427 Operation Panel Ass'y-A4				
A0885550	A0885551	4727 Operation Panel Ass'y -LT				
A0885650	A0885651	4727 Operation Panel Ass'y-A4				

INTERCHANGEABILITY CHART:

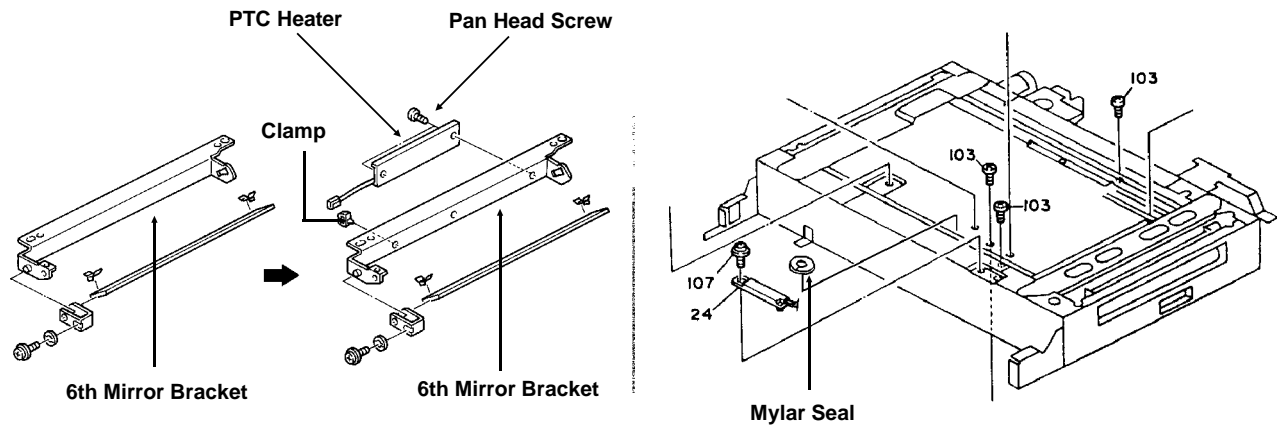
0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

Continued...

UNITS AFFECTED:

All FT4427/4727 copiers with Serial Numbers A3163020011 and A3173020021 will have the new style operation panels installed during production.

- **UPDATE No. 2 - PTC HEATER** - A new anti-condensation heater (called the PTC Heater) has been installed on the 6th mirror bracket. The FT4427/4727 was originally supposed to have the same anti-condensation heater that was first used in the FT5433/5733 copiers (located in the upper paper tray) but that heater was never cut into production for the FT4427/4727 copiers. However, a hole was provided in the optics base plate to accommodate the wiring harness for the upper tray heater. A mylar seal has been made available to cover the hole in the optics base plate.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
AX400040	PTC Heater - 100/115V 10W	0 → 1	21	27
AX400041	PTC Heater - 230V 10W	0 → 1	21	27
AA152312	Seal - 5 x 25 x 0.2	0 → 1	21	28
03140080W	Philips Pan Head Screw - M4 x 8	0 → n	21	109
11050199	Clamp	0 → n	21	110

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Number A3163010001 and A3173010001 respectively will have the PTC Heater installed during production.

BULLETIN NUMBER: 4427/4727-007
APPLICABLE MODEL: FT4427/4727

9/15/93

SUBJECT: SC63 - EXHAUST BLOWER MOTOR ERROR

SYMPTOM:

SC63 is illuminated.

CAUSE:

If the exhaust blower motor is de-energized and then re-energized prior to coming to a complete stop it can take over 2 seconds to re-start the motor. If this occurs, SC63 will be displayed.

SOLUTION:

The inner magnet alignment of the motor has been modified.

NOTE: *The description of the motor has been changed from the "Transfer Fan Motor" to the "Exhaust Blower Motor".*

					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
AX640027		Transfer Fan Motor - DC4.8W	1	1	77	22
	AX640046	Exhaust Blower Motor - DC4.1W				

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Numbers A3163040001 and A3173040001 respectively will have the new style blower motor installed during production.

BULLETIN NUMBER: 4427/4727-008
APPLICABLE MODEL: FT4427/4727

03/14/94

SUBJECT: PARTS CATALOG UPDATES

- **UPDATE NO. 1 - PAPER SIZE DECALS** - To facilitate manufacturing and servicing, the paper size decals have been removed. Instead of these decals, the paper size indications have been inscribed on the paper tray (P/N AF010029).

			REFERENCE	
OLD PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
AA002138	Decal - Paper size - A4	1 → 0	31 109	10 18
AA002137	Decal - Paper size - LT	1 → 0	31 109	10 18
AA002136	Decal - Paper size - A4	1 → 0	31 109	11 17
AA002135	Decal - Paper size - LT	1 → 0	31 109	11 17

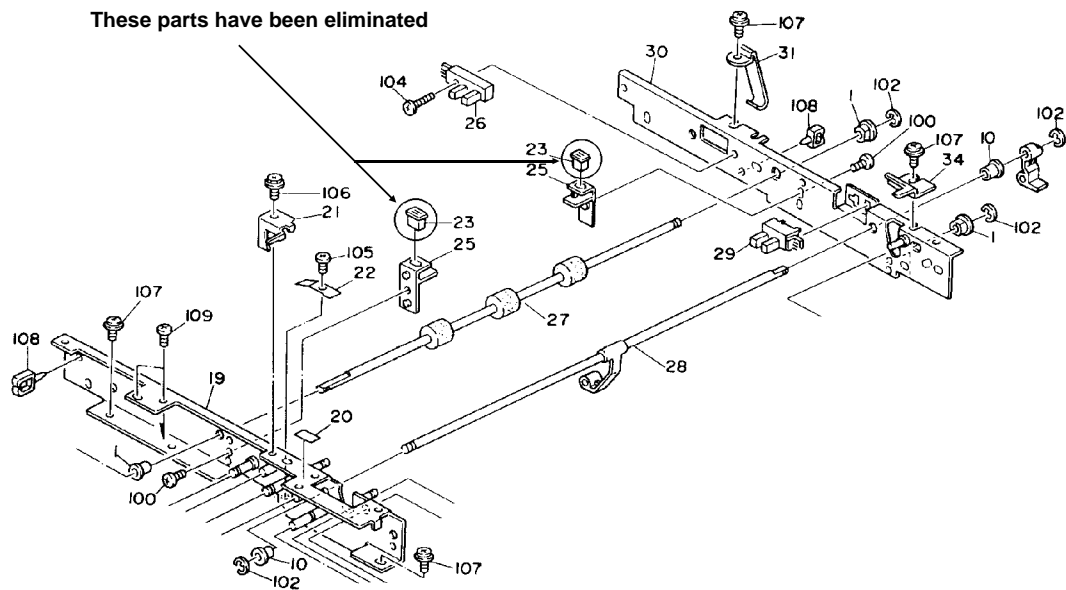
NOTE: *These decals are available as service replacement parts.*

- **UPDATE NO. 2 - PARTS CATALOG CORRECTION** - Please correct your parts catalog as follows:

				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
A3344666		Mylar Seal - 0.2 x 9 x 16	1 → 1	89	44
	A3344678	Rack Shield Mylar			
A3344663		Mylar Seal - 0.1 x 8.3 x 12	1 → 0	89	45
54472769		Stepped Screw	2 → 2	61	23
	52031686	Screw - Slide Rail			

Continued...

- **UPDATE NO. 3 - GUIDE PLATE STOPPER MAGNETS** - Since it has been determined that the magnets on the Guide Plate Stoppers do not affect paper transportation, they have been eliminated from production machines.



			REFERENCE	
OLD PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0493371	Magnet	2 → 0	93	23

BULLETIN NUMBER: 4427/4727-009
APPLICABLE MODEL: FT4427/4727

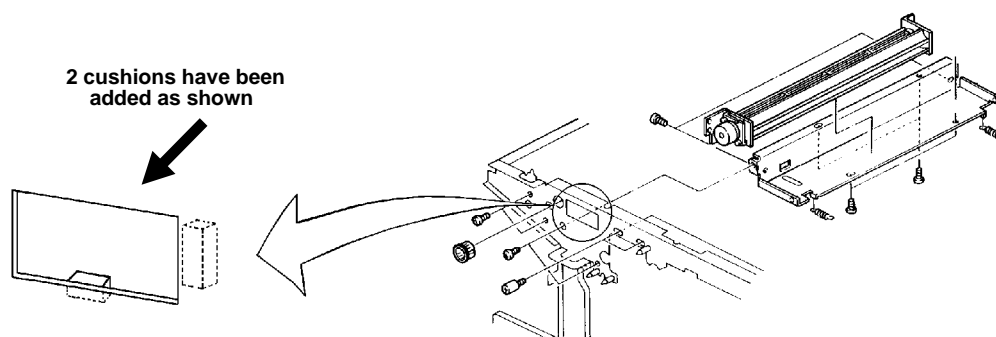
04/04/94

SUBJECT: PARTS CATALOG UPDATES

GENERAL:

The following Parts Updates are being issued to update all FT4427/4727 Parts Catalogs. This information should be incorporated into all existing FT4427/4727 Parts Catalog documentation.

- **UPDATE NO. 1 - FAN VIBRATION** - To reduce the vibration of the optics cooling fan, two cushions have been added on the inner side of the front optics frame.



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A3522608	Cushion	0 → 2	73	19*

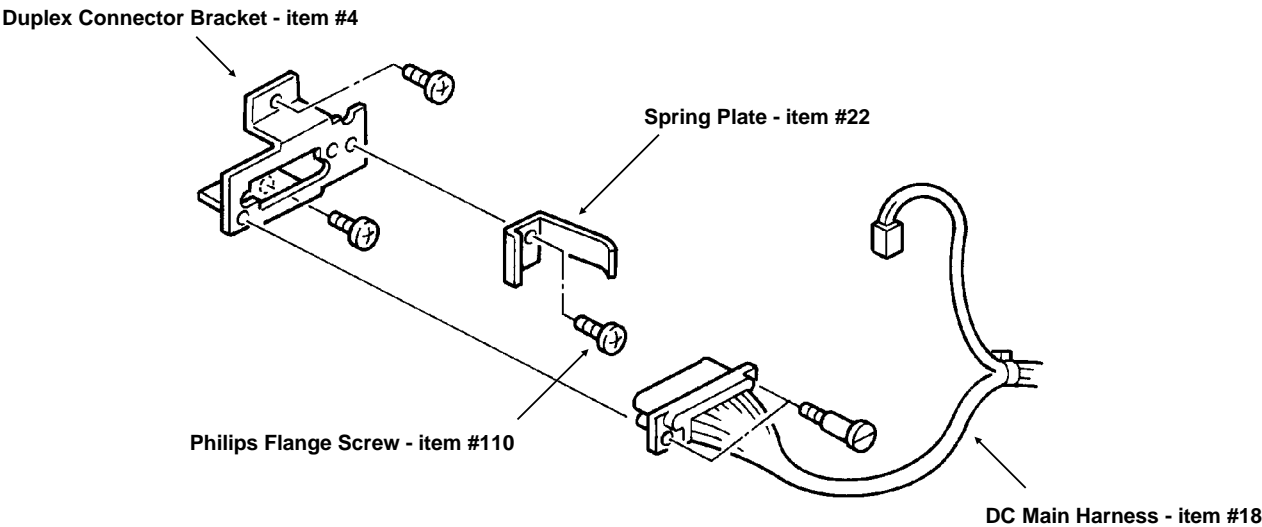
* DENOTES NEW ITEM

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Number A3163040001 and A3173040001 respectively will have the new cushions installed during production.

- **UPDATE NO. 2 - DUPLEX TRAY SPRING PLATE** - It was found that the Duplex Unit Left Rail sometimes contacts the DC Power Supply Board and makes noise. To prevent this, a Spring Plate [A] has been added as illustrated on page 2.

Continued...



			REFERENCE	
PART NUMBER	DESCRIPTION	QTY	PAGE	ITEM
A0704857	Spring Plate	0 → 1	85	22*
09603006W	Philips Flange Screw - M3 x 6	n → n + 1	85	110*

* DENOTES NEW ITEM

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Number A3163110001 and A3173110001 respectively will have the new Spring Plate installed during production.

BULLETIN NUMBER: 4427/4727-010
APPLICABLE MODEL: FT4427/4727

03/13/95

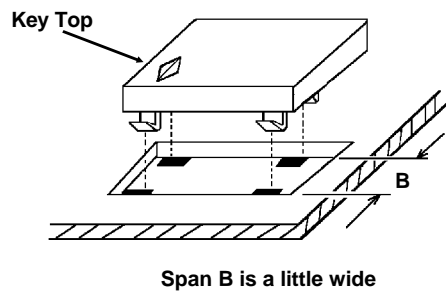
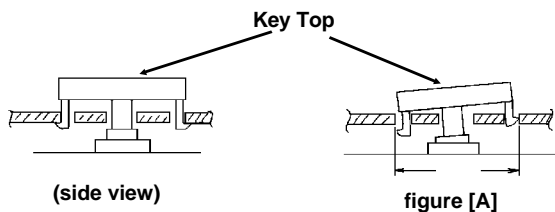
SUBJECT: PRINT KEY STUCK DOWN

SYMPTOM:

Continuous copies are run without holding down the print key.

CAUSE:

The right pawls of the Print Key slip out and are caught because the right span of the Print Key Topoles (see figure [A]) is too wide.

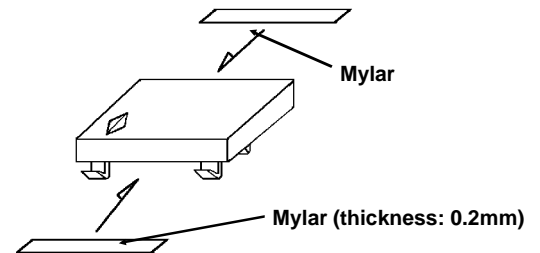


TEMPORARY COUNTERMEASURE:

A new style Print Key Top (with added mylar) has been made available.

UNITS AFFECTED:

All FT4427 copiers produced between Serial Number A316312XXXX and A316409XXXX and all FT4727 copiers produced between Serial Number A317312XXXX and A317409XXXX are susceptible to the above mentioned symptom.



ORDERING PROCEDURE:

Technical Services has a **limited supply** of the new style Print Key Top (with added mylar) for machines exhibiting this symptom. To obtain the Print Key Top at no charge, please complete and fax the attached form to Technical Services.

NOTE: *DO NOT order this item unless you are experiencing this symptom and have a machine that falls within the specified Serial Number range. It has been estimated that only 0.2% of these FT4427/4727 copiers may exhibit this symptom.*

PERMANENT COUNTERMEASURE:

The span of the Print Key Top holes has been reduced

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Number A316409XXXX and A317409XXXX will have the modified Print Key Top holes installed during production.

Continued...

SUBJECT: PRINT KEY STUCK DOWN

Fax this entire page in "DETAIL" mode ATTN: Technical Services - Copier

Fax Number: 201-882-3960

Each serial number given will represent a request for one new style Print Key Top (with added mylar)

Serial Number (s)	
1	
2	
3	
4	
5	

All serial number information will be verified before shipment is made.

UNITS AFFECTED:

All FT4427/4727 copiers manufactured after Serial Number A316409XXXX and A317409XXXX will have the modified Print Key Top holes installed during production.

NOTE: *DO NOT order this item unless you are experiencing this symptom and have a machine that falls within the specified Serial Number range. It has been estimated that only 0.2% of these FT4427/4727 copiers may exhibit this symptom.*

PLEASE TYPE OR PRINT CLEARLY.

DEALER NAME:		
ADDRESS:		
CITY:	STATE:	ZIP CODE:
ATTENTION:	PHONE # :	
DEALER ACCOUNT NUMBER:		

BULLETIN NUMBER: 4427/4727-010 REISSUE ★

10/26/95

APPLICABLE MODEL: FT4427/4727

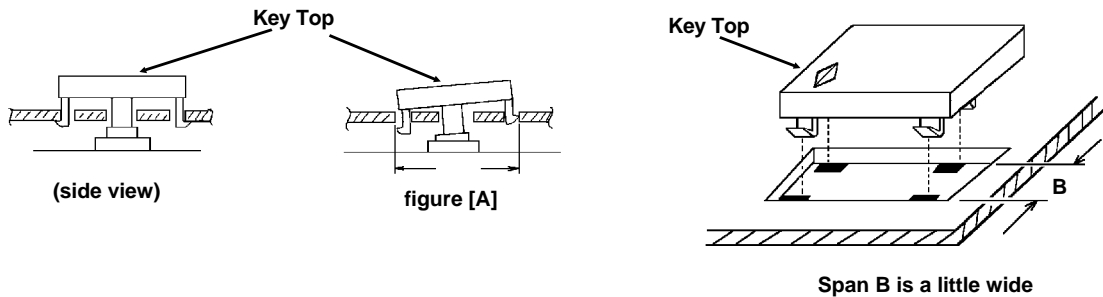
SUBJECT: PRINT KEY STUCK DOWN

SYMPTOM:

Continuous copies are run without holding down the print key.

CAUSE:

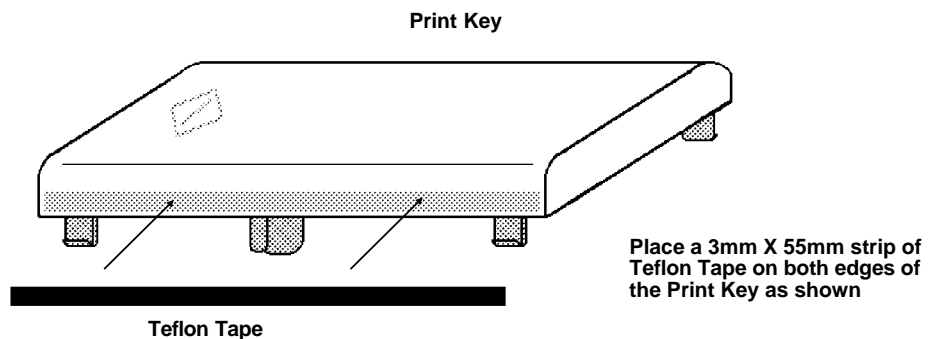
The right pawls of the Print Key slip out and are caught because the right span of the Print Key Topoles (see figure [A]) is too wide.



★ FIELD COUNTERMEASURE:

Technical Service's original supply of modified Print Keys (see TSB 4427/4727-010, 03/13/95) has been depleted. Therefore, it will be necessary to modify the Print Keys in the field as follows:

Cut two strips of Teflon tape (3mm X 55mm) and place them on each side of the Print Key as shown below.



UNITS AFFECTED:

All FT4427 copiers produced between Serial Number A316312XXXX and A316409XXXX and all FT4727 copiers produced between Serial Number A317312XXXX and A317409XXXX are susceptible to the above mentioned symptom.

PRODUCTION COUNTERMEASURE:

The span of the Print Key Top holes has been reduced on all FT4427/4727 copiers manufactured after Serial Number A316409XXXX and A317409XXXX.

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☒ MECHANICAL

☐ ELECTRICAL

☐ PAPER PATH

☐ F S M

☐ PARTS

☐ OTHER

BULLETIN NUMBER: 4427/4727 - 011

08/16/95

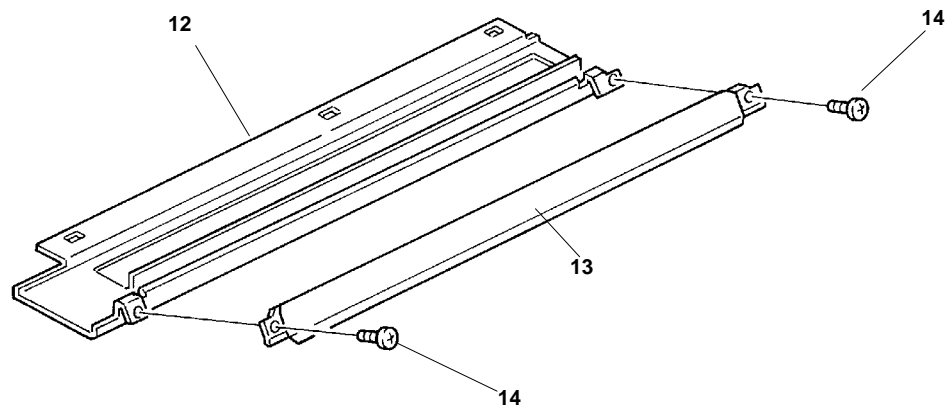
APPLICABLE MODEL: FT4427/4727

SUBJECT: PARTS CATALOG CORRECTIONS

GENERAL:

Correct your Parts Catalog as follows:

Correct the illustration on page 56



				REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	PAGE	ITEM
AD004068	A0692015	Charge Corona Unit	1 → 0	49	12
		Charge Corona Unit	0 → 1		
A0693070	AD023104	Entrance Seal	1 → 0	57	7
		T/S Corona Unit Casing	0 → 1	57	12
		Guide Plate	0 → 1	57	13
		Screw M3 x 6	0 → 2	57	14

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

BULLETIN NUMBER: 4427/4727 - 012

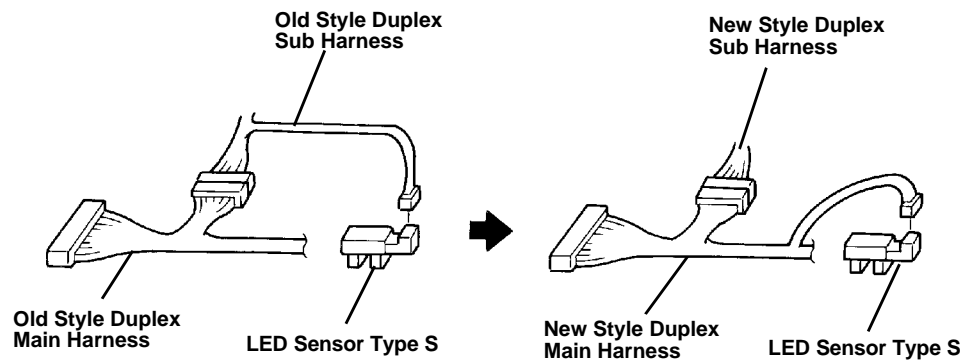
03/29/96

APPLICABLE MODEL: FT4727

SUBJECT: DUPLEX HARNESS

GENERAL:

To facilitate assembly at the factory, the location of the connector for the LED Sensor type S (shown below) has been changed from the Duplex Sub Harness to the Duplex Main Harness. This information should be incorporated into all existing FT4427/4727 Parts Catalog documentation.



					REFERENCE	
OLD PART NO.	NEW PART NO.	DESCRIPTION	QTY	INT	PAGE	ITEM
A3345331	A3345341	Sub Harness - Duplex	1 → 1	3/S	93	32
A3345330	A3345340	Main Harness - Duplex	1 → 1	3/S	89	2

UNITS AFFECTED:

All FT4727 copiers manufactured after Serial Number A3174120078 will have the new style Duplex Harnesses installed during production.

INTERCHANGEABILITY CHART:

0	OLD and NEW parts can be used in both OLD and NEW machines.	2	NEW parts CAN NOT be used in OLD machines. OLD parts can be used in OLD and NEW machines.
1	NEW parts can be used in OLD and NEW machines. OLD parts CAN NOT be used in NEW machines.	3	OLD parts CAN NOT be used in NEW machines. NEW parts CAN NOT be used in OLD machines.
3/S	Must be installed as a set on units manufactured prior to the S/N cut-in. On units manufactured after the S/N cut-in or previously modified, use the new part numbers individually.		

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☐ F S M

☒ PARTS

☐ OTHER